THE ARCHITECT & ENGINEER OF CALIFORNIA

VOL. X No. 1

IN THIS NUMBER

AUG. 1907

SINGLE COPIES 25 CENTS

ARCHITECT & ENGINEER Co. PUBLISHERS SAN FRANCISCO-LOS ANGELES

PER YEAR $1.50

46803

46803



FABRICATED

STRUCTURAL STEEL

Prompt Shipments

High Carbon Bars

Rounds, Squares, Twisted, Spiral.

Immediate Shipment.

GILHULY & AMBLER

Atlas Bldg. 604 Mission St., San Francisco, Cal.



SHEET AND TILE PRISM **GLASS** PLATE, WINDOW, MAZE, MOSS, SKYLIGHT, ETC.

HOLT, HABENICHT & HOWLETT, Inc.

269 FELL STREET, SAN FRANCISCO.

TELEPHONE, MARKET 479

FRANK HOWLETT RUDOLPH HABENICHT WILLIAM HOLT

SMOOT'S Biggest and Best

Plumbing, Heating and Sheet Metal Works

Phone, Red 41 San Mateo, Cal.

We Have Just Received a Shipment of

ROOKWOOD TILE

Which embraces some of the most Exquisite Designs and Colorings ever shown. We carry 30 Colorings in plain Tile made in all sizes. In Designs we have the Fish—Peacock—Sun Burst—Tudor Rose—German Thistle Modern—which are made in Beautiful Old Blue, Green, Lavender, Brown, Mahogany, Red, Dull Finish.

50 COLORS IN CARPETS

Exclusive Designs and Colorings

DRAPES TO MATCH OUR

WALL PAPERS

TAYLOR & SINCLAIR CO.

1464 BUSH STREET

Near Van Ness

PHONE FRANKLIN 3262

ARCHITECTS' SPECIFICATION INDEX

ARCHITECTURAL AND ORNAMENTAL STEEL AND IRON WORK
Ralston Iron Works, 20th and Indiana Sts, S. F.
Burnett Iron Works ....Fresno
Central Iron Works....625 Florida St., S. F.
Western Iron Works.....125 Beale St., S. F.
White Ornamental Iron Co., 499 Monadnock Building, S. F. Foot of Fifth Ave., E. Oakland
Joshua Hendy Iron Works, 75 Fremont St., S. F.
Walter Henderson.......110 Bush St., S. F.
Pacific Rolling Mills, 17th and Mississippi Sts., S. F.

ARTIFICIAL STONE, SCAGLIOLA, ETC.
California Scagliola Co., 68-70 Clara St., S. F.
Interlocking Stone Co.. 563 9th St., Oakland
Hudson Patent Block Co...172 East St., S. F.
Clinton System, L. A. Norris, Agt.,

ARTISTIC FURNITURE
Beach-Robinson Co..1717 California St., S. F.

ASBESTOS GOODS
Magnesia Asbestos Supply Co., 157 Spear St., S. F.

BANKS
Wells-Fargo National Bank, Union Trust Bldg., S. F.

BANK FIXTURES
New Pedrara Onyx Co...........San Diego

BELTING, PACKING, ETC.
Gorham Rubber Co...105 Fremont St., S. F.
H. N. Cook Belting Co., Fremont and Howard Sts., S. F.
Goodyear Rubber Co....573 Market St., S. F.

BLUE PRINTS & DRAWING MATERIALS
Keuffel & Esser............40 Oak St., S. F.
Eugene Dietzen........16-28 First St., S. F.

BOILERS
Keystone Boiler Works, Main and Folsom Sts., S. F.
Moynihan Company....401 Folsom St., S. F.

BRICK AND TERRA COTTA
Los Angeles Pressed Brick Co., 1006 Union Trust Building, Los Angeles
Carnegie Brick and Pottery Co., Montgomery Building, S. F.
Calif. Brick & Clay Mfg. Co., 223 Monadnock Building, S. F.
Sand Lime Brick—W. F. Barnes Commercial Co...223 Monadnock Building, S. F.
Steiger Terra Cotta & Pottery Co., 18th and Division Sts., S. F.

BRONZE AND IRON, ORNAMENTAL
John Finn Metal Works, Second and Harrison Sts., S. F.
Chr. Deterding .....67 Clementina St., S. F.

BUILDERS' HARDWARE
Wright Hardware Co.....77 Third St., S. F.
Palace Hardware Co., 456 Golden Gate Ave., S. F. 638 Market St., S. F.
Russell & Erwin Mfg. Co., 933 Monadnock Building, S. F.

BURLAPS, CANVASES, ETC.
Richter Mfg. Co., 2 Franklin Ave., Tenafly, N. J.

CAPITALS, MOULDINGS, ETC.
Western Builders' Supply Co., 4th and Natoma Sts., S. F.

CEMENT
Pacific Portland Cement Co., 1024 Franklin St., S. F.
Bowring & Co.........118 Battery St., S. F.
Barneson & Hibberd Co.,..175 East St., S. F.
Girvin & Eyre, Merchants Exchange Building, S. F.
W. R. Grace & Co....614 California St., S. F.
G. W. McNear........210 Battery St., S. F.

CEMENT—Continued.
Western Building Material Co., 430 California St., S. F.
Maldonado & Co., Inc., 268 Market St., S. F.

CEMENT AND PLASTER CONTRACTORS
Van Wagner Bros. ....Santa Cruz

CEMENT TESTS
Irving C. Allen..Beach and Mason Sts., S. F.

CONCRETE REINFORCEMENT
Corrugated Bars, sold by Jno. B. Leonard, 623 Monadnock Bldg., S. F.
Kahn Bars, sold by Couchot & Thurston, San Francisco, and Heber and Thayer, Los Angeles.
International Fabric & Cable, represented by Western Builders' Supply Co., 4th and Natoma Sts., S. F.
High Carbon Steel Bars, sold by Woods & Huddart............11 Front St., S. F.
Fabricated Structural Steel, sold by Gilhuly & Ambler..........Atlas Bldg., S. F.

COTTON FABRICS
California Cotton Mills Co., 310 California St., S. F.
Bemis Bros. Bag Co., 17th and Wood Sts., Oakland.

CRUDE FUEL OIL
Associated Oil Company....Kohl Bldg., S. F.
Valvaline Oil Company, 440 Brannan St., S. F.

DAMP PROOFING COMPOUND
Hydrex Damp Proof Paint, sold by Boyle-Luey Co...Monadnock Bldg., S. F.

ELECTRICAL CONTRACTORS
California Electrical Works, 642 Folsom St., S. F.
Century-Klein Electrical Co., 623 Sansome St., S. F.
Decker Electrical Co...157 Minna St., S. F.
Standard Electrical Construction Co. 60 Natoma St., S. F.
Steger Electrical Works........Fresno, Cal.

ELEVATORS
Van Emon Elevator Co.46 Natoma St., S. F.
Otis Elevator Company, Stockton and North Point, S. F.

ENGINEERS
W. W. Breite...925 Golden Gate Ave., S. F.
Couchot & Thurston..604 Mission St., S. F.
Schulz, John..........779 Market St., S. F.
Leonard, John B..623 Monadnock Bldg., S. F.
C. F. Wieland, 911 Mutual Savings Bank, S. F.

FIRE EXTINGUISHERS
Pacific Fire Extinguisher Co., 507 Montgomery St., S. F.
Paul Brant........No. 9 Mission St., S. F.
Badger Fire Extinguisher Co., 507 Montgomery St., S. F.
Goodyear Rubber Company, 573-579 Market St., S. F.

FIREPROOF WINDOWS
A. C. Rulofson Sheet Metal Works, Monadnock Building, S. F.
San Francisco Cornice Co., Bryant St., bet. 9th and 10th Sts., S. F.

FIREPROOFING
Clinton System, L. A. Norris, Agt., 833 Monadnock Building, S. F.
Hudson Patent Block Co...172 East St., S. F.
Roebling Construction Co., 476 Eighth St., S. F.
Demolith Co.......310 Clementina St., S. F.
Continental Fireproofing Co., 908 Mutual Bank Building. S. F.
Western Art Tile Co., Pacific Elec. Bldg., L. A.
Western Expanded Metal Co., 2265 California St., S. F.

FIRE PROTECTION
Goodyear Rubber Company, 573-579 Market St., S. F.

FLOORS. HARDWOOD, MOSAIC AND INLAID
Inlaid Floor Co.........759 Eddy St., S. F.
Hardwood Interior Co., 873 O'Farrell St., S. F.

GAS AND GASOLINE ENGINES
Baker & Hamilton......900 Third St., S. F.
Hercules Gas Engine Works........Alameda

ARCHITECTS' SPECIFICATION INDEX—*Continued*

GENERAL CONTRACTORS, ENGINEERS, ETC.
Cotton Bros. & Company, Monadnock Building, S. F. Bacon Building, Oakland
American-Hawaiian Engineering & Construction Co., Ltd......332 Turk St., S. F.
American Dredging Co...Bacon Blk., Oakland
Long & Hoyt.....Monadnock Building, S. F.
T. A. Pettus, Arcade Building, 109 O'Farrell St., S. F.
The James Stewart Company, 14 Grant Ave., S. F.
American Construction Co. 896 Eddy St., S. F.
The Lindgren-Hicks Co., 2d Floor Old Humboldt Bank Bldg., S. F.
Delmar Smith Co........Kohl Building, S. F.
Worswick Street Paving Co.....Fresno, Cal.
Pacific Construction Co...17 Spear St., S. F.
Richards-Neustadt Construction Co., 208 Stimson Building, Los Angeles 237 Monadnock Building, S. F.
H. L. Peterson......111 O'Farrell St., S. F.
Burrell Construction Co., 513 Central Bank Building, Oakland
Roberts Bros. Co., 311 Central Bank Building, Oakland
John C. Ince Company, 406 Sutter St., cor. Stockton, S. F.
Hoyt Bros., Builders' Exchange, S. F., and Santa Rosa
Healy-Tibbitts Construction Co., 106-11 Hansford block, S. F.
O. M. Bullock.....1420 Broadway, Oakland
Shaw Company.......11 Union Place, S. F.

GENERAL INSPECTION
Western Inspection Bureau, 621 Monadnock Building, S. F.

GLASS—PRISM, ART, ETC.
Cal. Art Glass Works..938 Howard St., S. F.
Holt, Habenicht & Howlett.269 Fell St., S. F.
San Francisco Art Glass Works, 944 Mission St., S. F.

GRATES
The Hamilton Grate, 177 Twelfth St., Oakland

HARD WALL PLASTER
Empire Plaster Co., 16th and Harrison Sts., S. F.
Marbleite Hardwall Plaster, sold by Western Building Material Co., 340 Steuart St., S. F.
Chubbuck & Harris.......Atlas Bldg., S. F.

HEATING APPLIANCES, ENGINEERS, ETC.
Solar Heater Co., 333 New High St., Los Angeles
Monash Younker Co..Chicago and New York
Mangrum & Otter, Inc..538 Mission St., S. F.
The F. Klein Square Furnace, 53 S. 2d St., San Jose
Pacific Blower & Heater Co., 3261 17th St., S. F.
Gilley-Schmid Co., Inc., 13th and Mission Sts., S. F.

INKS
California Ink Company....7 Jones St., S. F.

INSURANCE
Pacific Surety Co..326 Montgomery St., S. F.
Voss, Conrad & Co., Monadnock Bldg., S. F.

INTERIOR DECORATING
L. Tozer & Son........1527 Pine St., S. F.
W. W. Tucker, 14th and Webster Sts., Oakland
J. Llewellyn Co...................Oakland.
Schastey & Vollmer, 1930 Van Ness Ave., S. F.
Taylor & Sinclair Co., Inc., 1464 Bush St., S. F.

LAMPS
The Angle Lamp.—Bocsch Lamp Co., 1135 Mission St., S. F.
California Incandescent Lamp Co., Atlas Bldg., S. F.

LAUNDRY TRAYS
J. F. Reilly & Co.....23 Spencer Place, S. F.

LIGHTING FIXTURES
The Enos Company, Gough and Pine Sts., S. F.
Adams & Hollopeter..1882 Market St., S. F.

LIGHT AND WATER POWER MACHINERY
Pacific Alamo Mfg. Co.......Box 449, S. F.
Bennett Petroleum Burner Co., 579 Howard St., S. F.

LIME
Henry Cowell Lime & Cement Co., 15 East St., S. F.
North Point Warehouse Co., Mason and Bay Sts., S. F.

LUMBER
Sunset Lumber Co., First and Clay Sts., Oakland
White Bros....Spear and Howard Sts.. S. F.

MACHINERY AND MACHINERY SUPPLIES
Eby Machinery Co.........Atlas Bldg., S. F.
Harron, Rickard & McCone, 436 Market St., S. F.
Henshaw, Bulkley & Co., 219 Spear St., S. F 335 E. Third St., Los Angeles
Machinery & Electrical Co., 251 N. Main St., L. A. 164 N. Los Angeles St., Los Angeles
Meese & Gottfried Co., 19th and Harrison Sts., S. F.
Moore, Chas. C., Mission and 1st Sts., S. F.
Risdon Iron Works, Steuart and Folsom Sts., S. F.
Steiger and Kerr Stove and Foundry Co. 18th and Folsom Sts., S. F.
The Hewitt Machinery Co., 37 Second St., S. F.

MATTING RUBBER AND TILING RUBBER
Goodyear Rubber Company, 573-579 Market St., S. F.

METAL WINDOWS, ASBESTOS MATERIALS., ETC.
A. Willkomm..........779 Market St., S. F.

MUNICIPAL LIGHTING
H. A. Smith....621 Mariposa Ave., Oaklan.

OIL BURNERS
California Oil Burner Co...Natoma St., S. F.
"Little Giant," G. E. Witt Co., 1165 Howard St., S. F.
Dunn Petroleum Burner, 217 Monadnock Bldg., S. F.
Bennett's Petroleum Burner Co. 579 Howard St., S. F.
S. T. Johnson Co....1334 Mission St., S. F.

ORNAMENTAL CEMENT WORK, CAPITALS AND BRACKETS
D. Ross Clarke....Builders' Exchange, S. F.
Western Builders' Supply Co., 4th and Natoma Sts., S. F.

PAINTS, OILS, VARNISHES, ETC.
Bass-Heuter Paint Co..1814 Market St., S. F.
C. A. Westcott Paint Co...150 East St., S. F.
Klatt-Hirsch Co.........113 Front St., S. F.
Paraffine Paint Co., Merchants Exchange Building, S. F.
Pacific Paint and Varnish Co., 549 Howard St., S. F.
W. P. Fuller & Co., Cor. Mission and Beale Sts., S. F.

PLANK HOLDERS
J. H. Sullivan, 411 S. Ionia St., Grand Rapids, Mich.

PLUMBERS' SUPPLIES
Geo. W. Tay Co., 19th and Minnesota Sts., S. F.

RAILROADS
Southern Pacific Company, Flood Bldg., S. F.

REINFORCED CONCRETE CONSTRUCTION
John B. Leonard, C. E. Agent Corrugated Bars.......623 Monadnock Building, S. F.
Trussed Concrete Steel Co.....Detroit, Mich. (Kahn Bar), represented by Maurice Couchot, C. E., Atlas Building, S. F., Heber & Thayer, German Building, Los Angeles.
Victor Stanquist & Co..65 Landers St., S. F.
American Pacific Construction Company, 7th and Townsend Sts., S. F.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

REINFORCED CONCRETE APPLIANCES
Concrete Reinforcing Fabric, made by American Steel & Wire Co.........S. F.

ROOFING AND ROOFING MATERIALS
The Watson Roof Co.....176 Oak St., S. F.
Pacific Coast Paper Co..307 Market St., S. F.
Western Builders' Supply Co., 4th and Natoma Sts., S. F.
Asbestos Roofing, H. W. Johns-Manville Co..................180 Second St., S. F.

SAFES
Parcell's Safe Co., Inc...523 Market St., S. F.

SANITARY SPECIALTIES
Sanitary Devices Mfg. Co., Compressed Air System, etc., 16th and San Bruno Ave., S. F.

SHEET METAL WORK
R. C. Smoot.........................San Mateo
A. C. Rulofson....Monadnock building, S. F.

SIDEWALK LIGHTS
John McGuigan & Co., 1913 Mission St., S. F.

SKYLIGHTS, METAL CORNICES, ETC.
San Francisco Cornice Company, Bryant St., bet. 9th and 10th Sts., S. F.

STAFF AND STUCCO WORK
J. Fred Jurgewitz, 14 and 16 Twentieth Ave., E. Oakland
J. E. Manetta..Bay and Fillmore Sts., S. F.

STANDARD SCALES
Fairbanks, Morse & Co., 531 Howard St., S. F.
George A. Riggs, rep. The Howe Scale Co.................1690 Market St., S. F.

STEEL ERECTING
C. A. Blume....925 Golden Gate Ave., S. F.

STRUCTURAL STEEL AND IRON
Brode & Clark Iron Works, 621 Howard St., S. F.
Burnett Iron Works...........Fresno, Cal.
Benicia Iron Works, Monadnock Building, S. F.
Central Iron Works....625 Florida St., S. F.
Doble, Abner., Fremont and Howard Sts., S. F.

STRUCTURAL STEEL AND IRON—Continued
Ralston Iron Works, 20th and Indiana Sts., S. F.
Pacific Rolling Mills, 17th and Mississippi Sts., S. F.
Western Iron Works....125 Beale St., S. F.
Joshua Hendy Iron Works, 75 Fremont St., S. F.

SULPHUR
San Francisco Sulphur Co., 612 California St., S. F.

THEATER AND CHURCH SEATS AND SCHOOL FURNITURE
Spencer Desk Co...509 Montgomery St., S. F.
C. F. Weber & Company, 1151 Polk St., S. F.

TILE, MOSAIC, MANTELS, ETC.
Western Art Tile Co., Pacific Electric Building, L. A.
W. W. Montague & Co., Turk and Polk Sts., S. F.
Pacific Mantel & Tile Co., 125 Telegraph Ave., Oakland
Galassi Mosaic and Marble Co., 1121 Fell St., S. F.

TILE ROOF CONTRACTOR
Mark Kirkley, 226 Stimson Building, Los Angeles

WATER CLOSETS
Louis Lipp Co., represented by A. D. Dennison & Co.........534 Polk St., S. F.

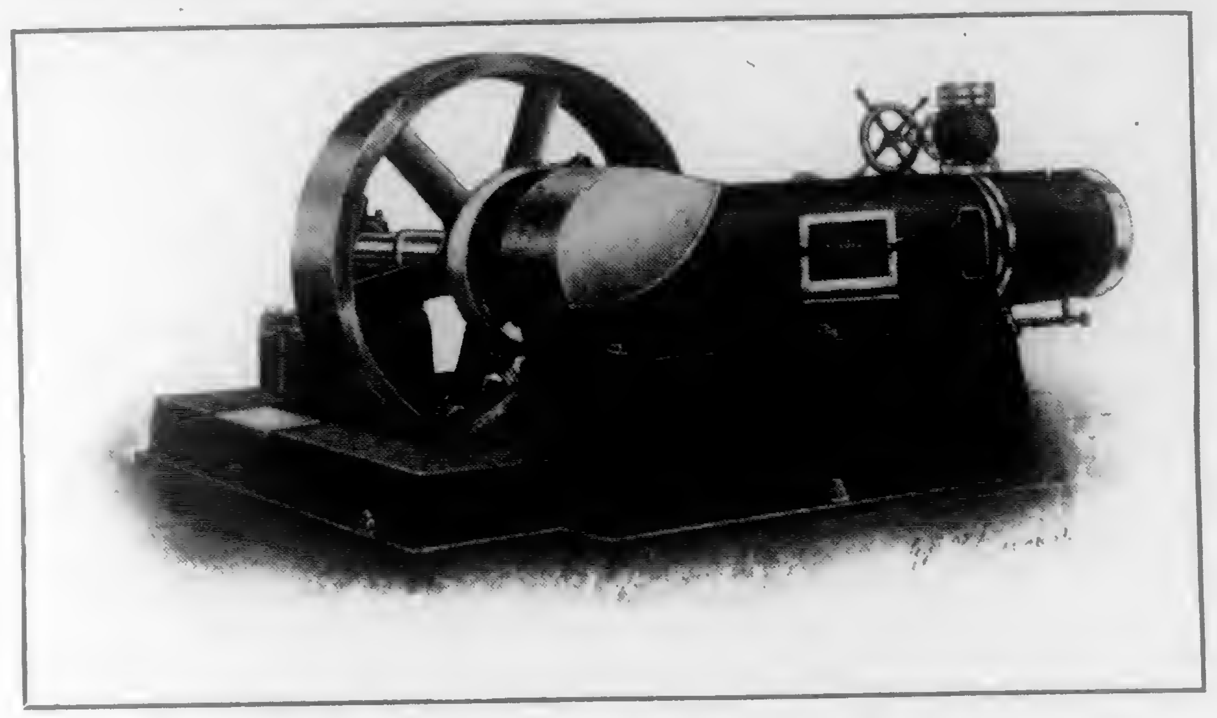
WATERPROOFING FELT
Hydrex Felt & Engineering Co., represented by Boyle-Luey Co., Monadnock Building, S. F.

WATER SUPPLY FOR BUILDINGS
Kewanee System........88 Second St., S. F.

WINDOWS
Hipolito Reversible Windows, 634 Maple Ave., Los Angeles

WOOD FINISHING
Bridgeport Wood Finishing Co., Represented by Whittier, Coburn Co., 18 Sansome St., S. F.

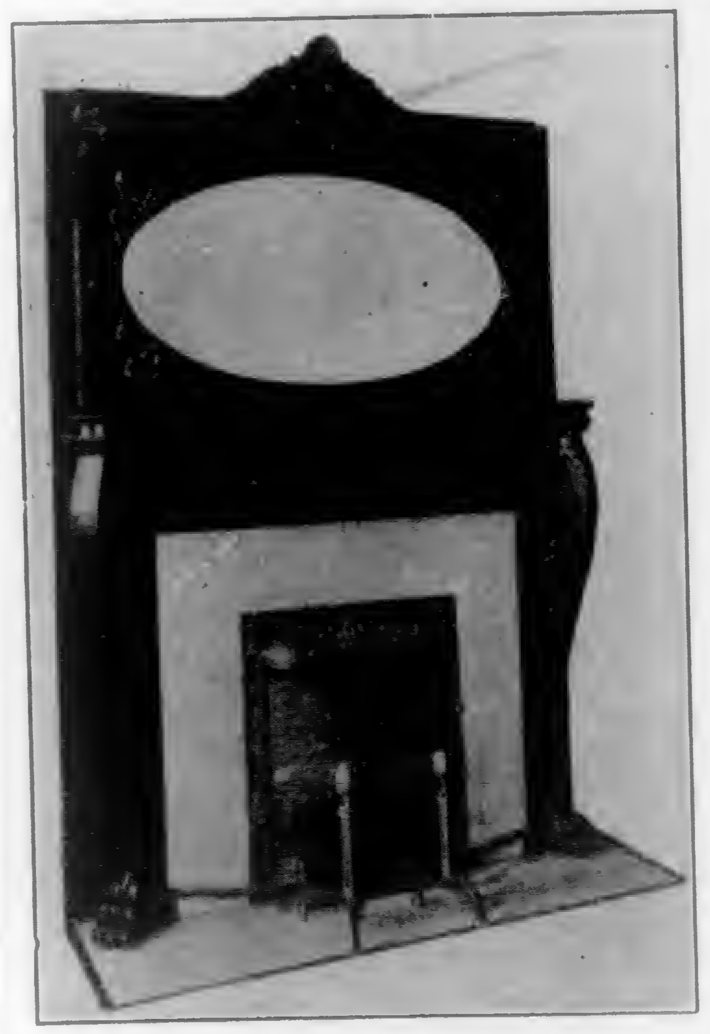
"ENCLOSED" SELF-OILING ENGINES
FOR OFFICE AND APARTMENT BUILDINGS



AN ECONOMICAL QUIET RUNNING AUTOMATIC ENGINE

BAKER & HAMILTON

COR. THIRD AND BERRY STS., SAN FRANCISCO, CAL.



One of the New Montague Fire-Places

W. W. MONTAGUE & CO.

Mantels, Grates and Tile

FIRE PLACE FIXTURES

MOSAIC AND CERAMIC TILE FLOORS

SALESROOM:

644-646 POLK STREET

SAN FRANCISCO

SAN FRANCISCO CHICAGO PHILADELPHIA NEW YORK

Sanitary Devices Manufacturing Co.



MANUFACTURERS OF

COMPRESSED AIR SYSTEM
VACUUM SYSTEM

COMBINED COMPRESSED AIR and VACUUM SYSTEM

STATIONARY PLANTS
PORTABLE APPARATUS

AUTOMATIC AIR DUST REMOVING DEVICES

Stationary Plants installed and in course of installation on the Pacific Coast

SAN FRANCISCO
- United States Mint
- United States Post Office
- Hale Bros. Inc.
- Monadnock Building
- Chronicle Building
- Union Trust Building
- Grant Building
- Crocker Building
- Shreve Building
- A. Schilling & Co. Building
- Fairmont Hotel
- St. Francis Hotel
- Shreve & Co.

OAKLAND
- Arcade Building

RIVERSIDE
- Glenwood Hotel

CORONADO
- Coronado Beach Hotel

DEL MONTE
- Hotel Del Monte

FRESNO
- Grand Central Hotel

SEATTLE, WASH.
- Lincoln Hotel

LOS ANGELES
- Hollenbeck Hotel
- Westminster Hotel
- Natick Hotel
- Wilcox Building
- Merchants' Trust Co.
- Coulter Building
- H. W. Hellman Building
- I. W. Hellman Building
- Alexandria Hotel
- California Club
- Development Co. Building
- Auditorium Building
- Crippen Apartments
- Hollywood Hotel
- E. P. Clarke (Residence)
- Equitable Savings Bank
- Percival Apartments
- Los Angeles Pacific Co.
- Pacific Electric Building

SAN JOSE
- Hayes Chynoweth Co.

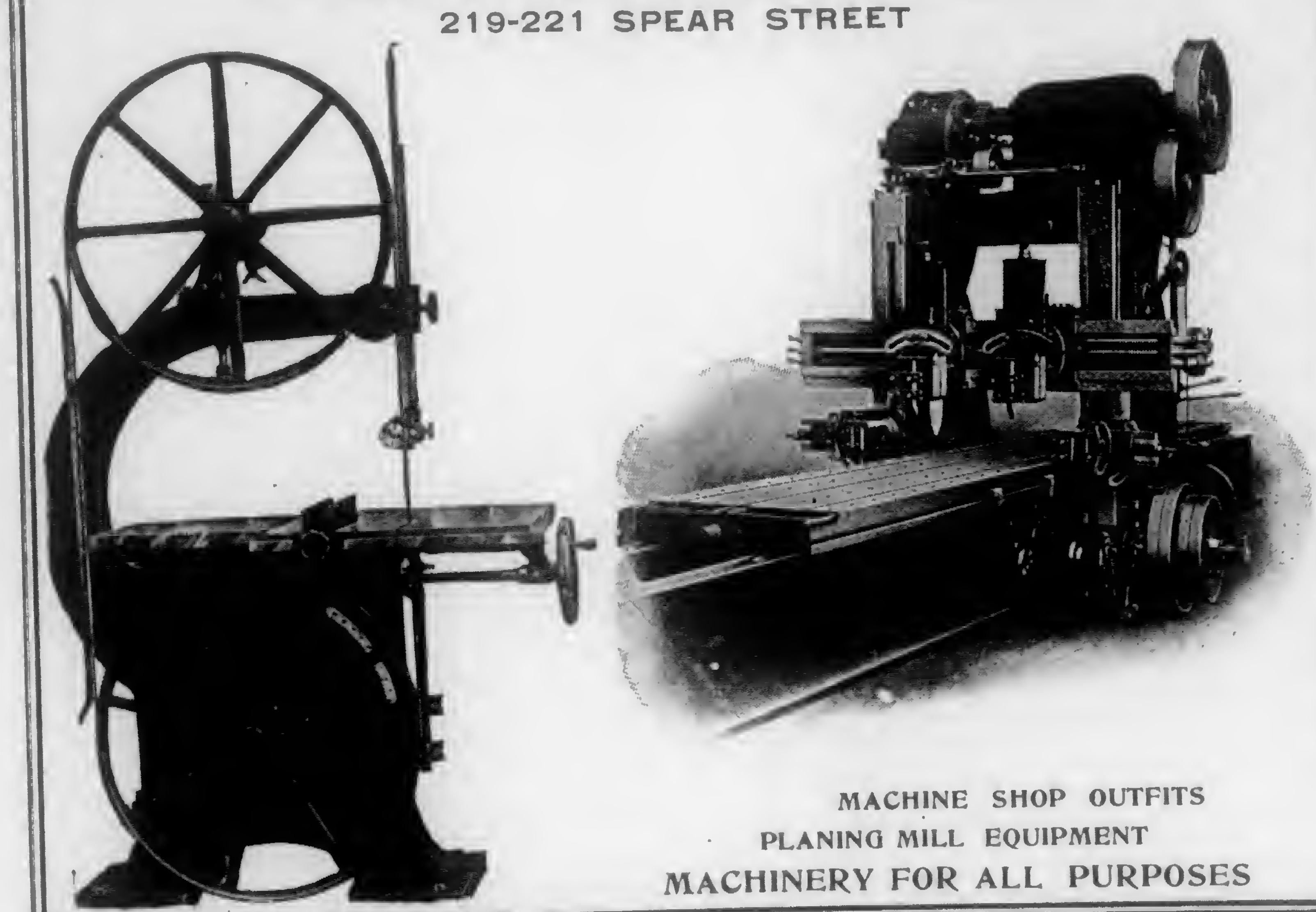
SACRAMENTO
- Weinstock, Lubin & Co.

PASADENA
- Dr. W. T. Bolton (Residence)

PORTLAND, ORE.
- Albington Hotel
- Wm. Fliedner Hotel
- J. P. Poulsen (Residence)

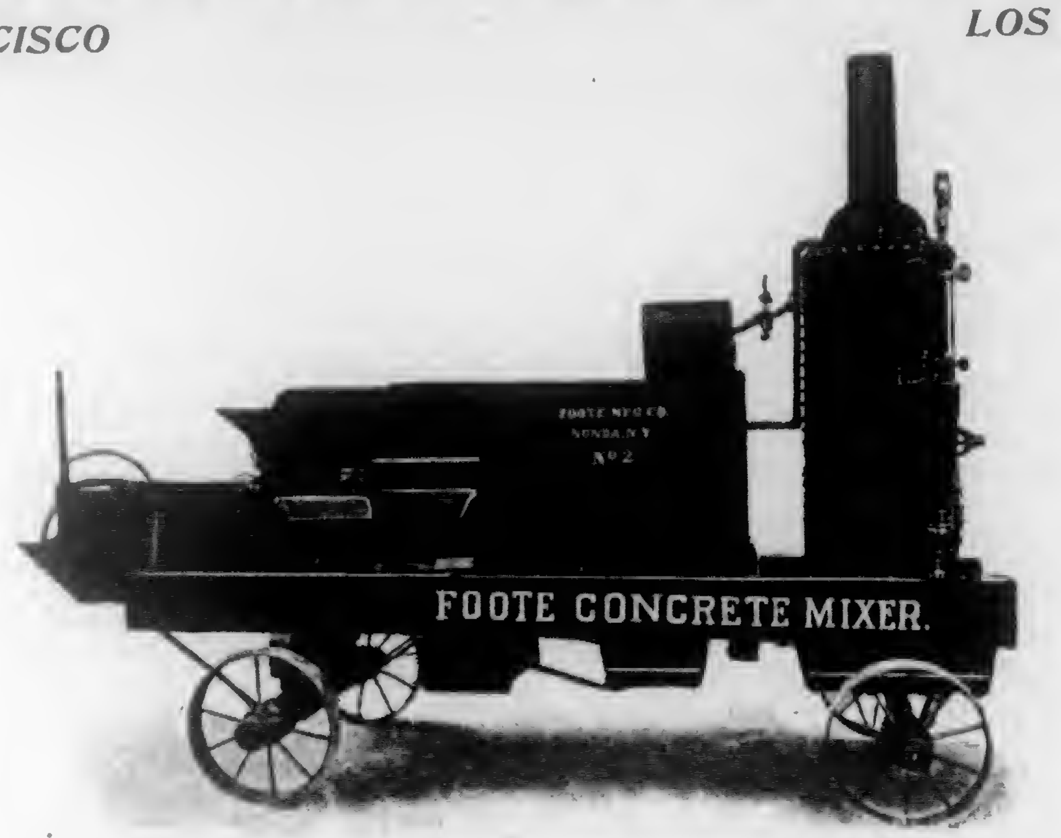
SAN FRANCISCO FACTORY AND OFFICE:

16th STREET and SAN BRUNO AVENUE



HARRON, RICKARD & McCONE,

SAN FRANCISCO LOS ANGELES



HOISTING ENGINES
MATERIAL ELEVATORS
AIR COMPRESSORS
PNEUMATIC TOOLS
CONCRETE MIXERS
BOILERS & ENGINES
DERRICK IRONS
SUPPLIES

CONCRETE REINFORCING FABRIC

For

Walls, Floors and Roofs

Variety of Constructions

Communicate with

American Steel and Wire Company

COAST OFFICES

SAN FRANCISCO - LOS ANGELES - PORTLAND - SEATTLE

WE BEG TO ANNOUNCE THAT MR. JOHN CALVIN SPAULDING, FOR MANY YEARS WITH THE TIFFANY STUDIOS, NEW YORK, AND ALSO THE J. AND R. LAMB STUDIOS, HAS CONNECTED HIMSELF WITH US AND WILL GIVE HIS ATTENTION TO HIGH-CLASS ECCLESIASTICAL AND RESIDENTIAL WORK, BRINGING TO BEAR HIS LONG EXPERIENCE IN MEMORIAL AND ORNAMENTAL ART IN THE EASTERN CENTERS.

MEMORIAL AND ORNAMENTAL WINDOWS FOR THE CHURCH.
LANDSCAPE AND ORNAMENTAL WINDOWS FOR THE HOME.

IF YOU ARE CONTEMPLATING ANY MEMORIAL OR ART GLASS WORK WE WOULD BE GLAD TO HAVE MR SPAULDING CALL ON YOU WITH DESIGNS AND SKETCHES, UPON REQUEST, WITH PARTICULARS.

WE ARE PREPARED TO EXECUTE IN THE MOST PERFECT AND ARTISTIC MANNER ANY WORK ENTRUSTED TO US, AND OUR FINISHED PRODUCT CAN NOT BE EXCELLED IN ANY SENSE BY ANY CONCERN EAST OR WEST.

California Art Glass Works
WILLIAM SCHROEDER,
PRESIDENT
938 HOWARD STREET
BET. FIFTH AND SIXTH STS.
SAN FRANCISCO, CAL.

Just What You've Been Looking For, Mr. Contractor!



IF YOU have a big job on hand—one that requires considerable transportation of material—then you must have our portable and industrial track and rolling stock equipment.



Rails, Steel Ties, Portable Track, Switches, Turntables, Crossings, Steel and Wooden Flat and Dump Cars. Complete Equipment Industrial, Standard and Narrow Gauge Railways.

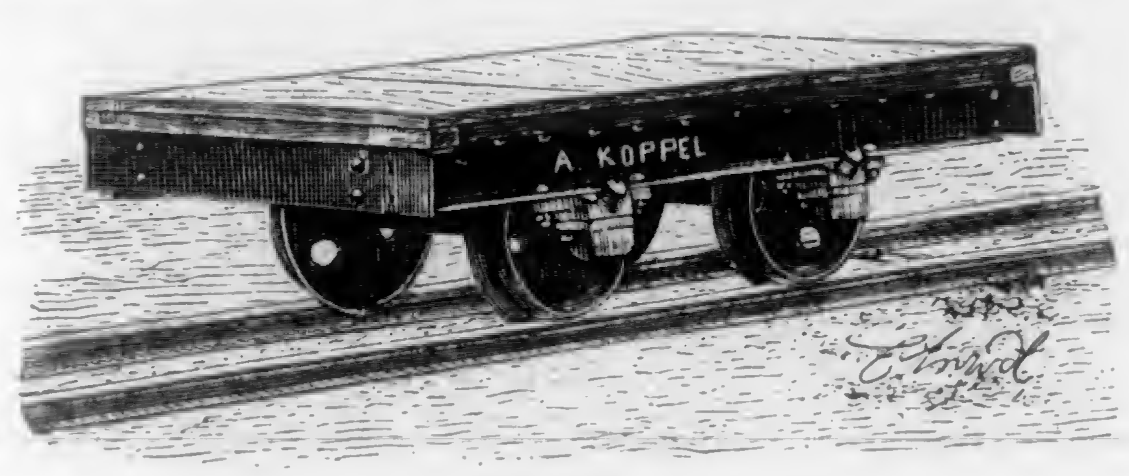


Fig. 109

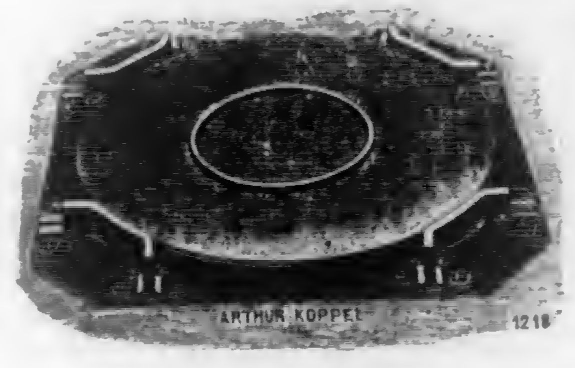
Platform wagon with square steel underframe and wooden floor without buffers.

Built to any size and gauge.

FOR CEMENT WORKS, CONCRETE CONSTRUCTION, FACTORIES, QUARRIES, BRICK YARDS, ETC.

ARTHUR KOPPEL COMPANY

Works at Koppel, Beaver Co., Pa.



Our Turn Table

1509-11 CHRONICLE BUILDING

San Francisco, California

NEW YORK—66-68 Broad Street
BOSTON—53 Oliver Street
PITTSBURG—McChesney Building
CHICAGO—1639 Monadnock Building

Ask for Catalogue No. 33



L. TOZER & SON CO.

"THE HOUSE OF CHARACTER"

HIGH-CLASS WALL PAPERS AND FABRIC NOVELTIES

We carry the finest selected line of Wall Papers in Foreign and Domestic Goods ever shown on the Pacific Coast. Also an exclusive selection of Cretonnes, Brocades and Tapestries exactly matching our Wall Papers. . . . . .

Artistic Interiors Designed and Decorated

Pacific Coast Agents for the Leading Foreign and American Wall Paper Factories

Also FAB-RI-KONA BURLAPS — *Correspondence solicited*

2511 WASHINGTON STREET, (NEAR FILLMORE) — 1527 PINE STREET, (NEAR VAN NESS)



Phone Oakland 1108

S. F. Phone PARK 11

BUILDERS' EXCHANGE 226 Oak St., San Francisco.

The J. Llewellyn Company

Successor to G. W. CLARKE CO., of S. F.

1325 BROADWAY, Oakland, Cal.

OPP. POST OFFICE

Foreign and Domestic

WALL PAPER

PAINTERS AND DECORATORS
WOOD FINISHING
PICTURE MOULDING
ART GLASS DECORATIONS

W. W. TUCKER

House Painting, Paper Hanging and Decorating

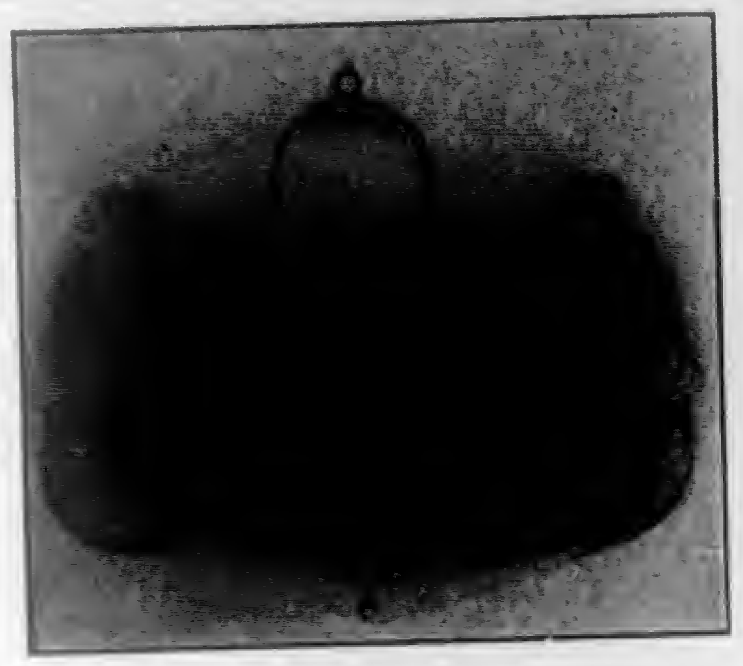
Natural Wood Finishing a Specialty

Office and Shop

14th & Webster Streets,

OAKLAND, CAL.

Telephone Main 716



JUST THE THING FOR THE BUNGALOW

ANGLE LAMPS

NO SMOKE NO ODOR LITTLE HEAT

COSTS LESS TO BURN THAN AN ORDINARY LAMP

As easy to operate as gas or electricity—and better than either.
Lighted and extinguished like gas.
Can be burned high or low without a trace of odor.

Send for catalogue or drop a postal and we will call.

BOESCH LAMP COMPANY

1135 MISSION STREET, - - - - - - SAN FRANCISCO, CAL.

JOSSON CEMENT

AND OTHER FIRST CLASS BRANDS

Belgian and German Artificial Portland Cements

W. R. GRACE & CO.

614 CALIFORNIA ST. San Francisco, Cal.

BUILDERS' HARDWARE

YALE AND TOWNE GOODS

Also Bath-room Fittings, Electrical Supplies, Cabinet Hardware, Roofing and Building Paper.

BRITTAIN & COMPANY (Inc.)

EVERYTHING IN HARDWARE

VAN NESS AVENUE AND TURK STREET, S. F.

IN BUSINESS AGAIN JUST ACROSS THE STREET FROM OLD LOCATION

WRIGHT HARDWARE CO.

We carry a complete stock of
RUSSELL & ERWIN'S BUILDERS' HARDWARE

77 THIRD STREET San Francisco, Cal.

National Steel Joist Hangers:
Post Caps and Bases:
CORBIN HARDWARE!

Palace Hardware Company

456 - 458 GOLDEN GATE AVE. San Francisco 638 MARKET STREET

MALDONADO & CO. (Inc.)

268 Market St., Hansford Building San Francisco
16 Beaver St., New York, N. Y. Globe Building, Seattle, Wash.
Telephone, West 2830

SOLE PACIFIC COAST AGENTS

"LION" Portland Cement, made by Dufossez & Henry, Confestu, Belgium

"Hammonia" Portland Cement, made by Hammonia Cement Works, Hamburg, Germany

Dealers in all kinds of
Eastern and Foreign Cement and Building Material

SUNSET LUMBER COMPANY

SPECIAL BILLS AND CARGOES CUT TO ORDER

C. H. OLINGER MANAGER

WHOLESALE & RETAIL DEALERS IN

PINE AND REDWOOD LUMBER

MAIN OFFICE & YARD FIRST & CLAY STS. OAKLAND

BRANCH YARD EAST 12TH ST & 17TH AVE. EAST OAKLAND.

The Architect and Engineer Of California

Terms of Subscription. $1.50 per Year

Single Copies. 25 Cents

Issued monthly in the interests of Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast.



Contents for August



Design for the New Palace Hotel, San Francisco *Trowbridge & Livingstone Architects*

Frontispiece, The Architect and Engineer of California, August, '07

THE

Architect and Engineer

Of California

Vol. X. AUGUST, 1907. No. 1.

Civic Pride

By W. GARDEN MITCHELL, Architect

"HE WHO steals my purse steals trash, but he who steals my good name, takes that which does not him enrich and leaves me poor indeed."

In some such language speaks England's greatest poet. Now that which is true of individuals is also true of cities. Nevertheless there are among us those who oppose the expenditure of public moneys on city beautifications and utilities on the ground that it is money wasted, an unremunerative investment. Had the quotation run, he who steals my good name steals trash and so forth, those who argue on such lines might have some logic in their reasoning, but the bulk of human experience is against the arguments of such who would maintain that mere commercialism is that ne plus ultra of economies. Shut out the light and air from your streets, congest your business and all effort within narrow limits, and raise your land values one, two or three hundred per cent. There! say the wise heads, is an economy; for to them it is more than economy it is fortune; but what of the unborn generations, the value of whose capacity for work is to be lowered millions upon millions, because the generation who bore it was denied a sufficiency of the two primary essentials to health and strength—sunshine and air. People who argue against wide streets or limitation to height of buildings if streets are narrow; people who will not spend money on the beautification of a city because it is an extravagance, that cannot be afforded are of the penny-wise pound-foolish class and should have no voice in the administration of public affairs. Talking civicly, he who impoverishes my purse for the improvement of my city takes that which I can best afford, even at some inconvenience, but he who deprives me of my sunlit streets my pure and health-giving air, my clear and sparkling water, my elevating surroundings of architectural buildings, my public parks and flower adorned squares and merry fountains deprives me of that which does not him truly enrich and leaves me as citizen poor indeed.

In the days of ancient Rome they builded on the banks of the Tiber a great city, and through the generations it grew in strength and beauty, and doubtless it was fashioned of great blocks of stone and massive beams of timber; but it is not the hand nor the head alone that builds a great city, it is also the heart. Now to the Romans was given the heart, for they were of the race of those who had endured the wilderness and shared the lair of the she-wolf; and so fierce a heart had they, for Rome, their native city, that it was all in all to them; even the temple was not more sacred and in distant lands they required but to mention the name of their city, to command respect. To treat with contempt a Roman was a



Frontispiece, The Architect and Engineer of California, August, '07

Design for the New Palace Hotel, San Francisco

Trowbridge & Livingstone Architects

THE

Architect and Engineer

Of California

VOL. X. AUGUST, 1907. No. 1.

Civic Pride

By W. GARDEN MITCHELL, Architect

"HE WHO steals my purse steals trash, but he who steals my good name, takes that which does not him enrich and leaves me poor indeed."

In some such language speaks England's greatest poet. Now that which is true of individuals is also true of cities. Nevertheless there are among us those who oppose the expenditure of public moneys on city beautifications and utilities on the ground that it is money wasted, an unremunerative investment. Had the quotation run, he who steals my good name steals trash and so forth, those who argue on such lines might have some logic in their reasoning, but the bulk of human experience is against the arguments of such who would maintain that mere commercialism is that ne plus ultra of economies. Shut out the light and air from your streets, congest your business and all effort within narrow limits, and raise your land values one, two or three hundred per cent. There! say the wise heads, is an economy; for to them it is more than economy it is fortune; but what of the unborn generations, the value of whose capacity for work is to be lowered millions upon millions, because the generation who bore it was denied a sufficiency of the two primary essentials to health and strength—sunshine and air. People who argue against wide streets or limitation to height of buildings if streets are narrow; people who will not spend money on the beautification of a city because it is an extravagance, that cannot be afforded are of the penny-wise pound-foolish class and should have no voice in the administration of public affairs. Talking civicly, he who impoverishes my purse for the improvement of my city takes that which I can best afford, even at some inconvenience, but he who deprives me of my sunlit streets my pure and health-giving air, my clear and sparkling water, my elevating surroundings of architectural buildings, my public parks and flower adorned squares and merry fountains deprives me of that which does not him truly enrich and leaves me as citizen poor indeed.

In the days of ancient Rome they builded on the banks of the Tiber a great city, and through the generations it grew in strength and beauty, and doubtless it was fashioned of great blocks of stone and massive beams of timber; but it is not the hand nor the head alone that builds a great city, it is also the heart. Now to the Romans was given the heart, for they were of the race of those who had endured the wilderness and shared the lair of the she-wolf; and so fierce a heart had they, for Rome, their native city, that it was all in all to them; even the temple was not more sacred and in distant lands they required but to mention the name of their city, to command respect. To treat with contempt a Roman was a

mortal offense wherever civilization spread. Such was the civic splendor of those ancient days.

Stone and concrete; steel and timber—all are good, but without civic pride we build in vain. He who builds only for himself builds for a fool, but he who builds delighting that men may praise the goodness of the thing, even when he is no more, builds well; in such manner we pray that the city of San Francisco may rise again from its ashes.

Then again there are those who say that art and commerce are incompatible, but to disprove this we have Venice at its best, the world's port of commerce and the Queen City of the Adriatic. San Francisco, a beautiful city, perhaps. God made the country and man the town. He is never on the road to reform who does not suspect his error. Now I have lived in San Francisco before there were any ten-story buildings and I have traveled in the interim into distant lands and seen many cities fair to look upon and some very ugly, and by your kind permission I say San Francisco was neither of these. That which God has made is indeed fair but the part man has contributed is quite ordinary. Let us know the truth and the truth will make us free. High up in the towers of the ancient cathedral of Mexico you look out upon a city fair and beautiful. At your feet the civic center, the Zocola; beautiful with trees and flowers, benches for repose. Gleaming fountains and for the ear sweet music. All around are stately buildings; beyond the Alameda, equally beautiful; the Paseo de la Reforma with its trees and green sward and statuary, the Castle of Chepultapec, the Garden of San Domingo and streets and plazas everywhere beautiful in architecture and never-ending interest. Then of course we have Paris, the model and mirror of a perfect modern city, and many others that we shall not cite. What is the commercial value to Paris of its beauty? Incalculable.

From my same watch-tower on Nob Hill I look out in the dreamy twilight when the sun is low, and all that is real is shadowy, and place such points of interest to my liking. Union Square I see a beautiful garden such as that enchanting plaza de Armes at Guadalajara, planted as if the gardener had been trained in Eden (not that absolutely worthless arrangement of trees they have in the real Union Square). Along its sides I see first the Academy of Art and fronting it The School of Architecture and Engineering, and beyond the orange and blue mosaic of some stately dome competing in color with the sky. From Union Square to Van Ness avenue stretches the Alameda and from the cool recesses of its foliage on the fitful breeze comes the sound of music; on many seats and along its endless and varying ways, among fountains and works of the sculptors art, I see moving an enchanted throng as if perchance the poor benighted people of San Francisco had been permitted to enter the Garden of the Gods, or perchance that a portion of the Golden Gate Park had been dropped into the center of the city for their daily not weekly enjoyment. Van Ness avenue has become a boulevard, a miniature Champs Eleysee or Paseo de la Reforma, and so I wander on to other tree-lined walks, plazas with flowers and fountains, benches and music, bright lights, pleasing architecture, beautiful domes and towers, and even from that most uninviting region, the Potrero, I fancy I can see the moon gleaming on a canal that reaches from the civic center to the bay, and can hear the splash of oars and the twang of the guitar, and so on through the Mission endless points of interest, in streets and plaza. I can see in this hazy twilight, all around the everlasting hills girding the city even as a jeweled belt, to enhance the beauty of a Queen. For indeed there is the Queen City of the Tranquil Sea, but she sits as yet among her hills, in her valleys and waits; for the time of her adornment is not yet.

The self-imposed hallucination passes, I look upon that which is, and behold from the point of beauty born of art it is indeed found wanting. No, the facts regarding San Francisco are these, that she is beautifully situated but that nothing from the bay to the Twin Peaks save the planting of Golden Gate Park has been done to take advantage of this splendid site. Four points for improvement suggest themselves as those on which we may first concentrate. The gateway to the town, or the open space and buildings to be created fronting the Ferry landing. This is most important and stamps upon the mind of the stranger entering our gates the sense of our importance. The civic center, clearing away sufficiently to bring into view the City Hall and such other civic buildings as may accrue from time to time. Extending the Park Panhandle to the civic center. Grouping of buildings and providing for open spaces around the new cathedral to be built on Nob Hill, and perhaps treating Van Ness avenue as a boulevard. Good plans for most of these have already been prepared if we could only get them adopted. As regards the style of architecture, that which has proved most attractive in warm and bright-skied countries such as Spain, Italy and further East, suggests itself as the model we should try to equal, leaving the styles of more northern countries to their own grey skies. Not perhaps as yet that perfect refinement of Greece, nor in all things the stateliness of Italy, but rather that poetic though less accurate architecture of Spain; to this let us add the color of the Moor of the Far East. And so having chosen, and with form erect, every sinew tense with civic pride, pride of our city, let us set the standard of our ambition well beyond our hope of attainment and with our faces gleaming as in the light of those fateful April evenings, struggle forward to the distant goal.

* * *

Contractor Bids Against Himself

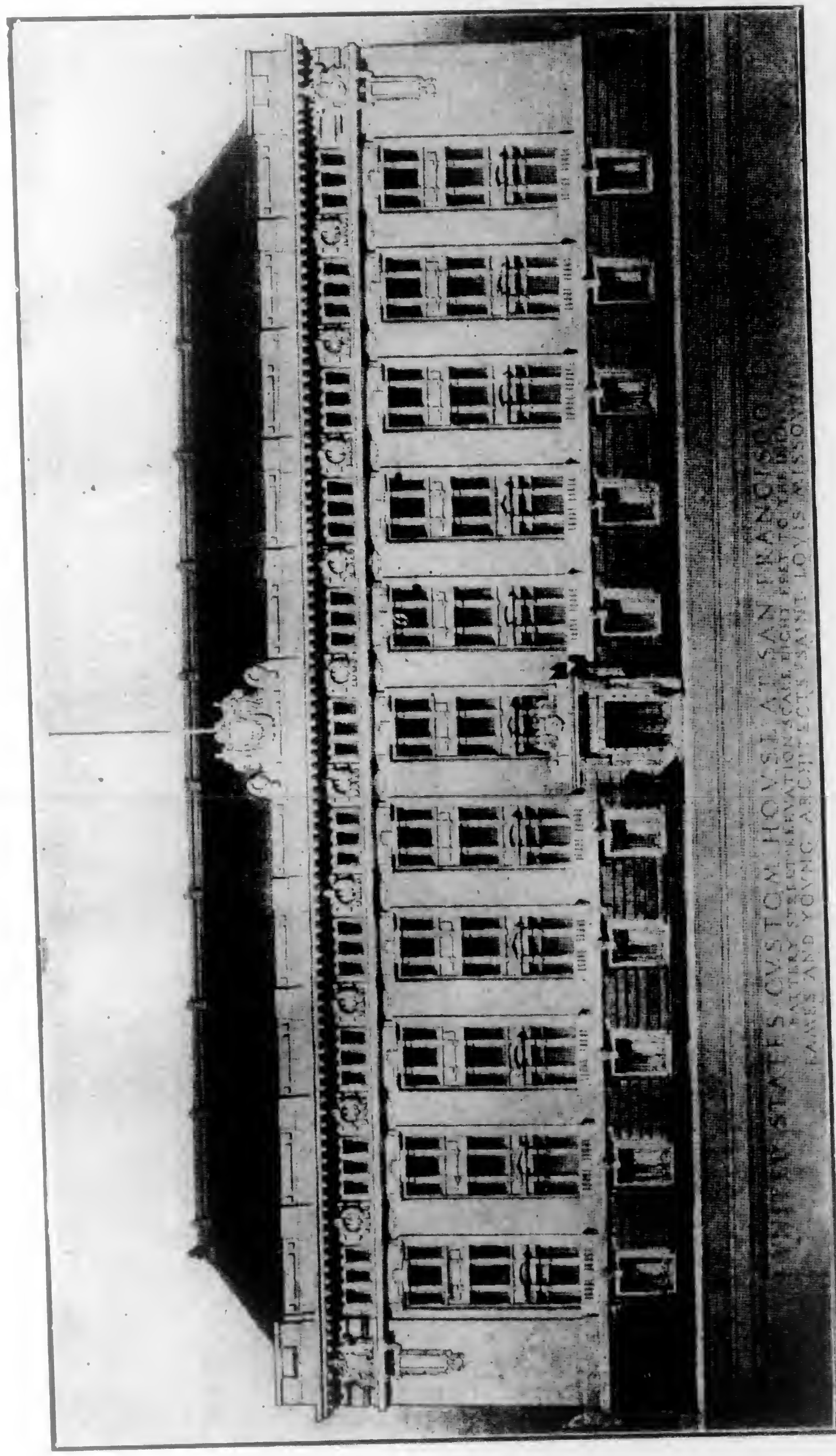
A good story has been going the rounds of the Detroit papers regarding a contractor who submitted figures to a local architect covering the structural work in connection with a local building undertaking and was awarded the job. It appears that shortly afterward, forgetting that he had secured the contract, the builder called up the architect and asked why he had not been advised concerning his bid. The architect helped along the slight misunderstanding by joking about submitting so unreasonable an estimate.

"Figure on that job again and send in your revised estimate and may be you can get it yet," said the mischievous architect. After scaling down his bid as much as he felt he could afford to, he sent it in and was promptly advised that he had been awarded the job. Not many days passed, however, until he called to mind that he had been given the contract in the first place, but it will be some time before his friends will cease to "josh" him over his ridiculous mistake.—Ex.

* * *

The Bachelor's Soliloquy

To wed, or not to wed;
That is the question.
Whether 'tis better
To remain single
And disappoint a few women—
For a time;
Or marry
And disappoint one woman—
For life. —Judge.



New Custom House Building, San Francisco

Eames & Young, Architects



The Old Custom House Building, San Francisco

United States Custom House Building, San Francisco

By WILLIAM A. NEWMAN, Architect

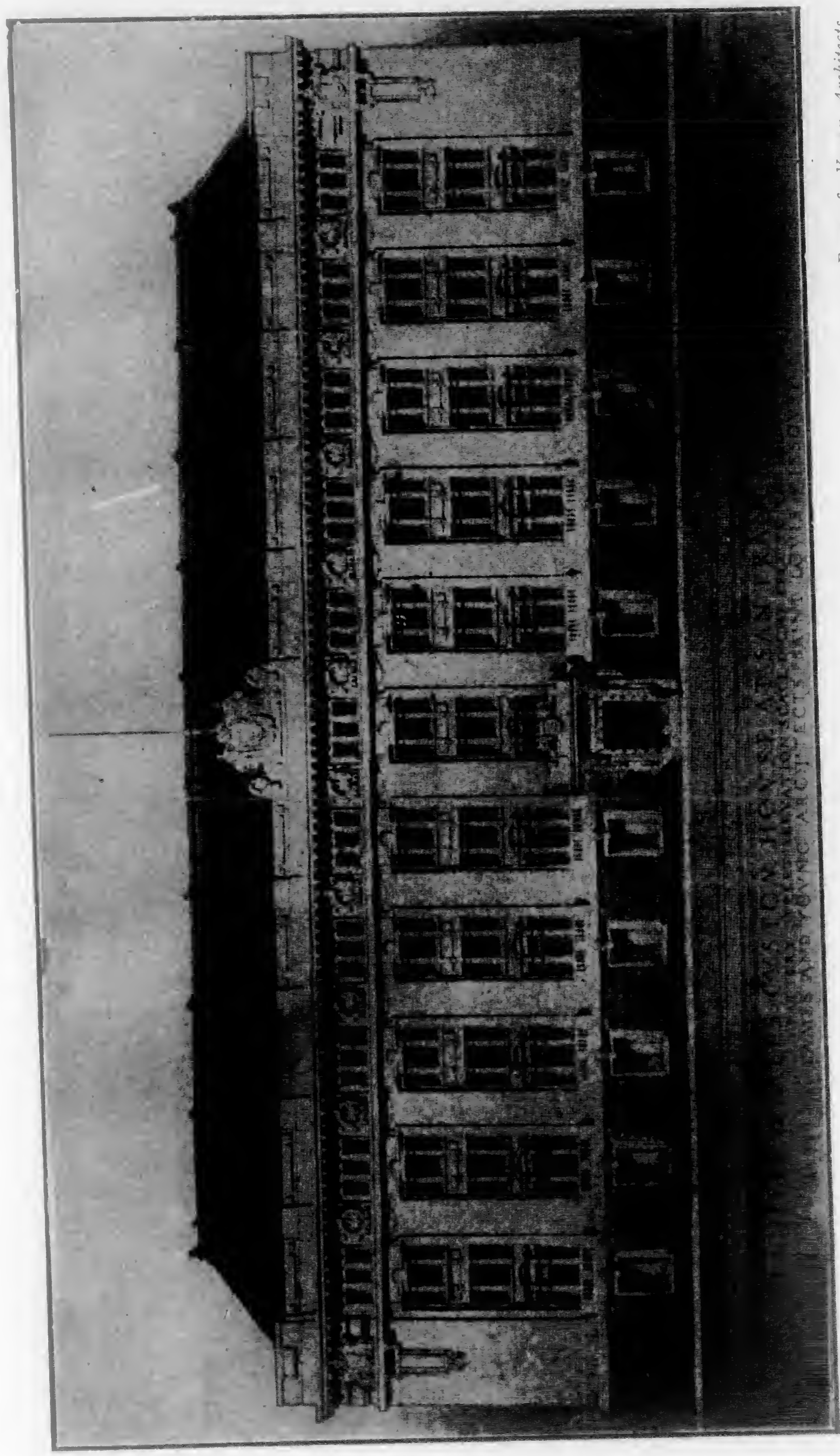
AMONG the many beautiful structures being erected in San Francisco, fast changing and forming the new skyline of the greater city of tomorrow, may be counted the United States Custom House building, occupying the entire western frontage on Battery street between Washington and Jackson streets.

The erection of the steel frame is now completed and the work of setting the granite facing will start immediately.

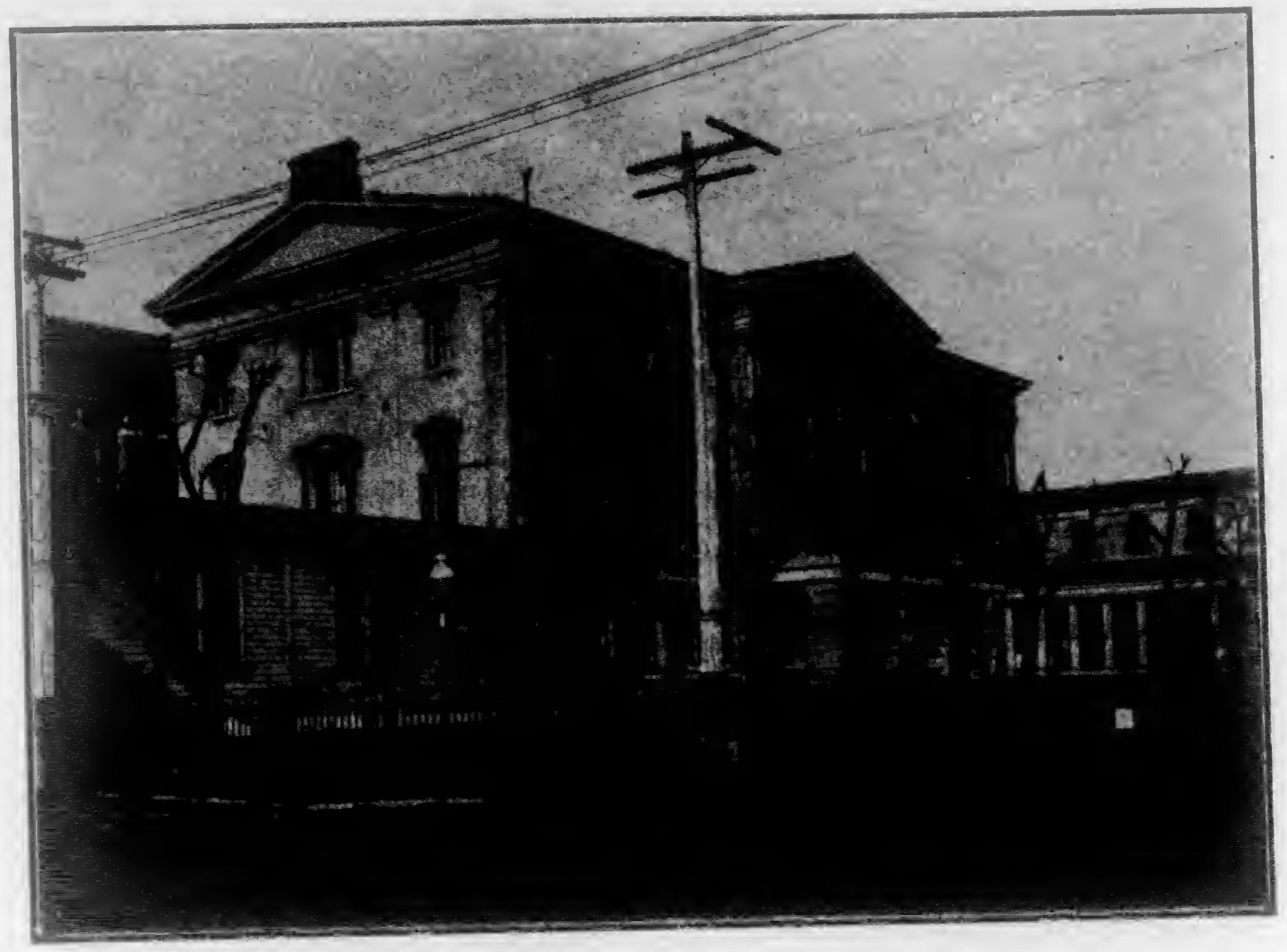
While it is a matter of pride to the citizens of this State that the Federal buildings, which have been designed and completed within the past few years, show that the supervising architect of the Treasury Department is keeping abreast of the spirit of the times and reflect much credit on his office, yet the new home of the customs service is only indirectly under the supervision of his office.

The successful architects in the competition are Messrs. Eames and Young, of St. Louis, Mo., who have produced an impressive and nicely balanced structure in the modern renaissance style of architecture, well adapted to the requirements of the various branches of the government service for which it is intended, and in distinct contrast to the old three-story building, with its classic facade, which it has supplanted. In size the building is 265 feet by 117 feet and contains five stories.

The superstructure is faced with California gray granite from quarries near Raymond, Madera county, excepting the rear court walls which are of white enamel brick. The building is fireproof throughout, with skeleton steel frame placed upon a concrete foundation supported on wooden piling.



New Custom House Building, San Francisco — *Eames & Young, Architects*



The Old Custom House Building, San Francisco

United States Custom House Building, San Francisco

By WILLIAM A. NEWMAN, Architect

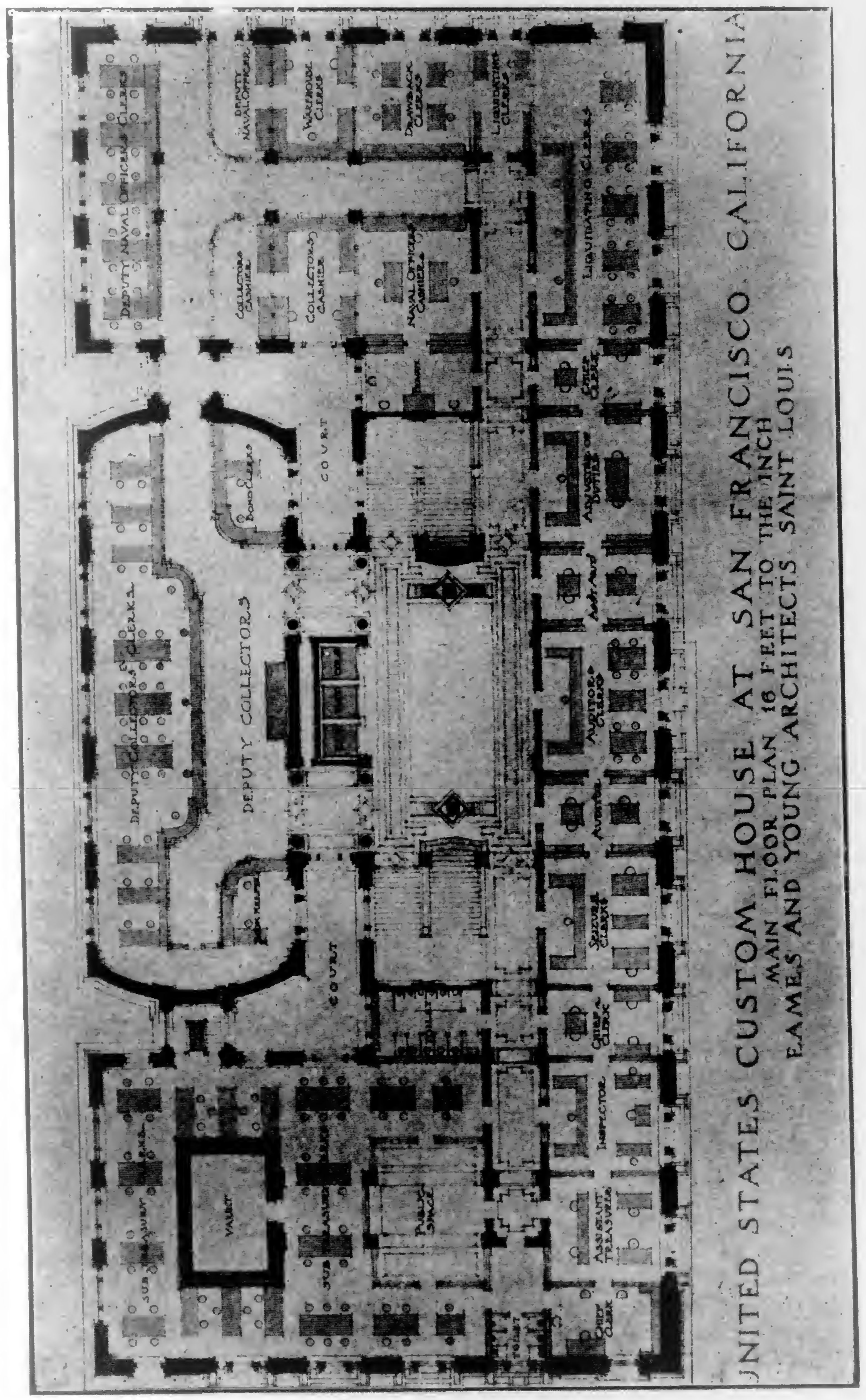
AMONG the many beautiful structures being erected in San Francisco, fast changing and forming the new skyline of the greater city of tomorrow, may be counted the United States Custom House building, occupying the entire western frontage on Battery street between Washington and Jackson streets.

The erection of the steel frame is now completed and the work of setting the granite facing will start immediately.

While it is a matter of pride to the citizens of this State that the Federal buildings, which have been designed and completed within the past few years, show that the supervising architect of the Treasury Department is keeping abreast of the spirit of the times and reflect much credit on his office, yet the new home of the customs service is only indirectly under the supervision of his office.

The successful architects in the competition are Messrs. Eames and Young, of St. Louis, Mo., who have produced an impressive and nicely balanced structure in the modern renaissance style of architecture, well adapted to the requirements of the various branches of the government service for which it is intended, and in distinct contrast to the old three-story building, with its classic facade, which it has supplanted. In size the building is 265 feet by 117 feet and contains five stories.

The superstructure is faced with California gray granite from quarries near Raymond, Madera county, excepting the rear court walls which are of white enamel brick. The building is fireproof throughout, with skeleton steel frame placed upon a concrete foundation supported on wooden piling.



Main Floor Plan, New Custom House, San Francisco *Eames & Young, Architects*

The corridor walls are to be lined with selected high grade white Italian marbles, and the floors of the same materials with Belgian black borders. All screen partitions, counters, desks and wood finish will be in white oak. Three elevators have been provided.

The mechanical plant will be located in the present Appraisers' warehouse adjacent, which will be connected, by a series of tunnels, with the new building and will operate all machinery and the heating systems for both buildings.

In addition to the customs officials, quarters are also provided for a branch Postoffice, Life-Saving service, Coast Survey and Revenue Cutter service, Internal Revenue office, Lighthouse engineer, Engineers of Harbor Fortifications, Chinese bureau, Weather bureau and Steamboat Inspection service.

The original intention of locating the Sub-Treasury in this building has been abandoned and quarters elsewhere will be provided for the Treasury officials.

The contractors, Thomas Butler & Son, expect to have the construction work completed within the next two years.

The Congressional appropriation for the new building is $1,500,000 which will be slightly under 62 cents per cubic foot.

By their long training and experience in the construction of Federal buildings, Superintendent Joseph W. Roberts, representing the United States Government, and J. F. Campbell, representing the architects, are fully qualified to guarantee that the Government's interest will be well cared for and the citizens of San Francisco will be proud to point to this addition to its monumental buildings as one of perfect construction and finish.

* * *

Papering the House

A decorator whose services are in great demand says that he seldom puts figured paper on a library wall.

"The library is for quiet reading and reflection," he says, "and anything that tends to distract the eye and thoughts is out of place. In the dining-room the dining table is the center of attraction and the room should set it off to the best advantage. Many persons like a bright red dining-room, yet there is no color harder to suit with table decorations. There are a host of colors that one cannot use with a bright red setting. In fact, green and white are the only possibilities. Dark red, brown or soft tapestry effects combine excellently with everything. A dining-room, too, in Colonial yellow and white is charming.

"When it comes to the hall a rich red wall with white enamel paint is a happy combination.

"The color of a room should depend very largely upon its exposure. For a sunless north room cold colors, such as blue and green, should never be employed. The sunny side of the house is the place for blues and greens and sombre effects."

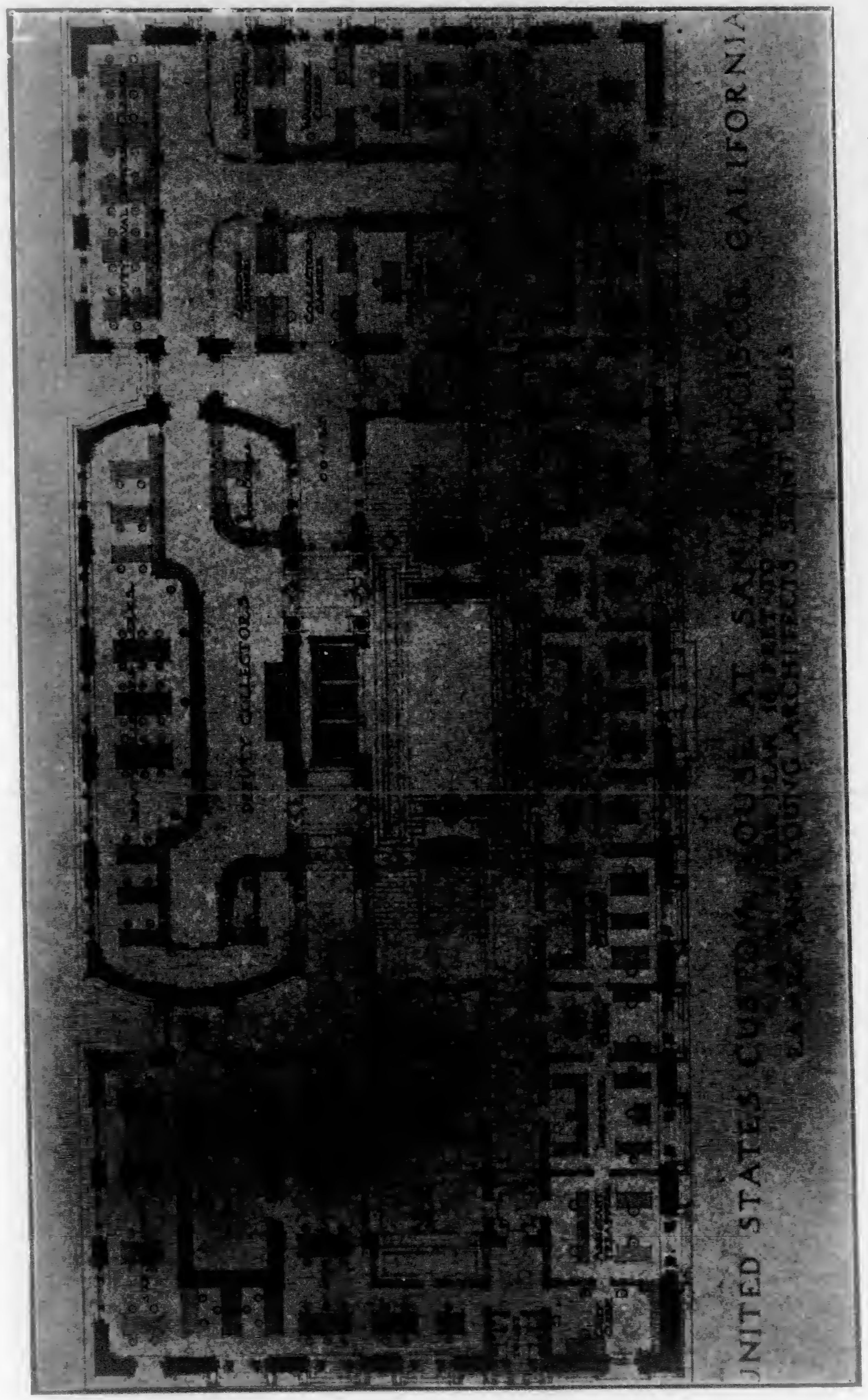
* * *

Got Results

Stockson.—One day last week old man Gotrox bought a lot of those "Do it now" signs and hung 'em around the office.

Bond.—How did the staff take it?

Stockson.—Almost unanimously. The cashier skipped with $30,000, the head bookkeeper eloped with the private secretary, three clerks asked for an increase of salary, and the office boy lit out to become a highwayman and got as far west as Pittsburg before he was caught and disarmed.—Judge.



Main Floor Plan, New Custom House, San Francisco — Eames & Young, Architects

The corridor walls are to be lined with selected high grade white Italian marbles, and the floors of the same materials with Belgian black borders. All screen partitions, counters, desks and wood finish will be in white oak. Three elevators have been provided.

The mechanical plant will be located in the present Appraisers' warehouse adjacent, which will be connected, by a series of tunnels, with the new building and will operate all machinery and the heating systems for both buildings.

In addition to the customs officials, quarters are also provided for a branch Postoffice, Life-Saving service, Coast Survey and Revenue Cutter service, Internal Revenue office, Lighthouse engineer, Engineers of Harbor Fortifications, Chinese bureau, Weather bureau and Steamboat Inspection service.

The original intention of locating the Sub-Treasury in this building has been abandoned and quarters elsewhere will be provided for the Treasury officials.

The contractors, Thomas Butler & Son, expect to have the construction work completed within the next two years.

The Congressional appropriation for the new building is $1,500,000 which will be slightly under 62 cents per cubic foot.

By their long training and experience in the construction of Federal buildings, Superintendent Joseph W. Roberts, representing the United States Government, and J. F. Campbell, representing the architects, are fully qualified to guarantee that the Government's interest will be well cared for and the citizens of San Francisco will be proud to point to this addition to its monumental buildings as one of perfect construction and finish.

* * *

Papering the House

A decorator whose services are in great demand says that he seldom puts figured paper on a library wall.

"The library is for quiet reading and reflection," he says, "and anything that tends to distract the eye and thoughts is out of place. In the dining-room the dining table is the center of attraction and the room should set it off to the best advantage. Many persons like a bright red dining-room, yet there is no color harder to suit with table decorations. There are a host of colors that one cannot use with a bright red setting. In fact, green and white are the only possibilities. Dark red, brown or soft tapestry effects combine excellently with everything. A dining-room, too, in Colonial yellow and white is charming.

"When it comes to the hall a rich red wall with white enamel paint is a happy combination.

"The color of a room should depend very largely upon its exposure. For a sunless north room cold colors, such as blue and green, should never be employed. The sunny side of the house is the place for blues and greens and sombre effects."

* * *

Got Results

Stockson.—One day last week old man Gotrox bought a lot of those "Do it now" signs and hung 'em around the office.

Bond.—How did the staff take it?

Stockson.—Almost unanimously. The cashier skipped with $30,000, the head bookkeeper eloped with the private secretary, three clerks asked for an increase of salary, and the office boy lit out to become a highwayman and got as far west as Pittsburg before he was caught and disarmed.—Judge.

Supreme Court Hands Down Decision Bearing on the Mechanics' Lien Law

By T. C. KIERULFF

A MATTER of importance to the owners of property and contractors alike is the recent decision of the State Supreme Court in reference to the Mechanics' Lien Law. Two very interesting points were decided and a third one reaffirmed.

In all liens of sub-contractors upon which suit to foreclose has been prosecuted the courts have always allowed attorneys' fees to the lien claimants. It made no difference with what justice the owner of the property conducted the defense, if the lien claimant was but partially successful he was allowed attorney's fees which in some instances exceeded the amount of the lien. But always the owner of the property stood to lose.

The statutory provision in question is found in section 1195, Code of Civil Procedure, and is as follows: "The Court must allow as part of the costs, * * * reasonable attorneys' fees * * * to be allowed each claimant whose lien is established, whether he be plaintiff or defendant." No provision is made for attorneys' fees to the owner of the property if he is successful. He is not given the same protection under the law. He does not get equal protection. There never was any sensible reason why one class of creditors should be thus preferred over all others. Our Mechanics' Lien Law has been responsible for much injustice and provocative of more litigation than any other statute in our books. It has now been finally determined that such a law allowing attorneys' fees is violative of the Fourteenth Amendment to the Federal Constitution and is violative of the provision of our State Constitution.

A second point decided is this: A sub-contractor is not entitled to personal judgment against the owners, but is entitled only to enforce his claim against the land.

In nearly all contracts for the erection of a building there is a provision for damages to be paid to the owner for the non-completion of the building within the time specified in the contract; but until recently such a provision did not avail the owner in very many instances and perhaps never when liens were filed by sub-contractors, mechanics or material men. The owner was not allowed to offset the lien with any amount that might be due him from the contractor for any actual damage he might have sustained by reason of the non-completion of the building within a given time, and therefore all redress was denied.

It frequently happens that a building is constructed for some particular purpose and time is essential to the owner. Our laws provide—Section 1184, Code of Civil Procedure—that "As to all liens, except that of the contractor, the whole contract price shall not be diminished by any prior or subsequent indebtedness, offset or counterclaim, in favor of the reputed owner and against the contractor." Heretofore it has always been held that such damages as the owner might sustain for the non-completion of the building, provided for in the contract, came within the above provision of the law. It was finally decided by the State Supreme Court, in the case of Hampton vs. Christensen, and affirmed in the case of Builders' Supply Depot vs. Dennis O'Connor, that damages for failure of the contractor to finish the work within the time specified in the written contract may be deducted by the owner as against lien holders and that the clause above quoted, has reference in the first place to offsets not arising under the terms of the contract, and as to which, from an inspection of the contract, material men and laborers could have no notice.

Protection of Structural Steel

By O. M. BECKER

THE use of paper as a building material is not particularly new. It has been customary for a good many years to use a sheathing of tarred or otherwise prepared paper or felting in frame buildings to prevent dampness and cold working through the walls. It is now found that paper is, in combination with a suitable paint, the best material for preserving steel and steel structures exposed to the atmosphere.

Though in many respects one of the most desirable, and indeed necessary, building materials of the present, steel has the disadvantage of quickly corroding under the influence of ordinarily damp atmospheres, and its decay is particularly rapid when subject to air laden with smoke and other gases such as are common in manufacturing centers. The matter of protecting steel structures, especially in cities, is therefore a problem of great importance. If the steel framework of our great skyscrapers cannot be protected from atmospheric influence, the life of such a building is necessarily limited.

Up to the present time the effort has been chiefly toward covering the surface of steel structural parts with some lasting and gas resisting mineral paint, and where possible enclosing them within masonry. In spite of these precautions it is found that the rusting still goes on to some extent.

Concrete answers much better. In fact steel thoroughly imbedded in concrete does not rust at all; and a steel-concrete building, properly constructed, would last for thousands of years, growing stronger rather than weaker with increasing age. But it is not always convenient to cover steel parts with concrete, even where it is permissible to go to the expense of doing so. It can be readily seen, therefore, that the discovery of some relatively inexpensive method of covering and protecting steel structures is of considerable economic importance.

The mineral paints generally used are not sufficient for the purpose; for though they protect the metal beneath to a considerable extent, it is found after a time protruding points appear, which when punctured prove to be rust formations. Even in the case of the very best paints, applied in three or more coats, this action takes place within the space of a year or two under the most trying conditions.

Evidently some moisture penetrates the paints and acts upon the steel beneath. The solution of the problem lies in some way tightly sealing the surface. And for this purpose it is found that nothing answers nearly so well as ordinary paraffine paper.

In application the steel is first thoroughly cleaned of rust by means of wire brushes, and then covered with a coat of some sticky paint. Upon this is pressed a layer of paraffine paper, the edges well lapped; and the whole covered with another coat or more of some good mineral paint.

Steel thus protected or wrapped remains in the same condition continuously; or at any rate during the three years since the method has been tried, no evidence of deterioration or corrosion has been detected, even where constantly exposed to the action of smoke and gases; and in most cases the inner coat was found, on examination, to be still green and sticky.—Ex.

* * *

Brick has proven its worth because it has shown its adaptability to every need in structural work. It is cheap, because any kind of brick can be bought to suit the buyer's pocketbook. It withstands the deteriorating influences of any climate. It makes a dry, warm building. It is easy to handle by the builder. Brick is made almost everywhere, and is therefore easily obtainable.



Hotel to be Built at Mason and O'Farrell Streets, San Francisco *Frank Van Trees, Architect*

Cement Shingles Cheaper than Wood

The use of cement for replacing articles made of wood is increasing every day. Cement has already replaced wood, to a great extent, in building sidewalks, bridges, fenceposts, steps, building walls, foundations and many other purposes and is commanding considerable attention at present in the form of shingles. In the earlier instances of concrete roofing the material was used in the same manner as in laying a floor, but the great strength required in a floor is not necessary in a roof. The cement shingles are only a little heavier than slate and not much more expensive than the best wood shingles, and, as they are practically indestructible, they are cheaper in the end than any other material, including tile and slate. These shingles are made in a great variety of designs and are reinforced with metal skeletons, which hold the cement together, and terminate in loops at the edges for nailing to the roof. They are practically everlasting, as moisture, the cause of universal decay, is the chemical agent in the process of hardening cement and when properly mixed and tempered the cement shingles become harder and more durable the more they are exposed to the weather.—Pop. Mechs. Exchange.

The Origination of the Steel Skeleton Idea

ANENT the statement that the late W. L. B. Jenney, architect, of Los Angeles, was the originator of the steel skeleton idea, the American Architect has this to say: "A few years ago, because of disputation over the matter, the American Institute of Architects examined the evidence accessible and decided that as between Messrs. Bradford L. Gilbert, L. S. Buffington and W. L. B. Jenney, all architects of standing, the latter had the better claim to be considered the originator of the modern method of steel-skeleton construction for high buildings. There is some reason for believing that the dismantling of the old shot-tower in 'the Swamp' district in New York City that is now going on may, as the structure was erected in 1856, prove that the method was in its essentials employed before Colonel Jenney built the Home Life Insurance Building in Chicago. But Colonel Jenney passed away in Los Angeles still in the belief that his claim to original authorship was undisturbed."

Commenting on the above, F. W. Fitzpatrick, architect, of Washington, D. C., writes as follows:

"To the Editors of the American Architect: Dear Sirs:—Your editorial in the issue of June 22d, anent the Gilbert-Buffington-Jenney claims as to which should be considered the originator of the modern steel skeleton construction was most interesting to me and brought up a flood of old though not particularly pleasant memories.

"The proceedings, evidence, etc., introduced before the American Institute of Architects must have been a sort of star-chamber affair, because this is the first I hear of it, and I generally manage to keep pretty well posted as to what is going on in architectural matters. Besides, what the mischief had the Institute to do in settling any such disputation that is so essentially purely legal in nature, and that is dreaded even by the highest and best equipped courts in the land?

"I know that Colonel Jenney's Home Life Building in Chicago was the first skeleton structure in the country. I did not even know that Mr. Gilbert had claims to antedating it, but it never seemed to me that the Buffington, or any of the other patents in that line of construction, amounted to a row of pins. The whole thing was rather the result of sometimes slow, sometimes rapid, evolution and the fertility of the American mind to grapple with existent conditions.

"The Buffington patent always seemed more or less of a joke to me. In 1883 I was employed by him as a designer. Previous to that time I had had a lot to do with high church towers and had often thought over some scheme or other of doing away with the excessive weight and thickness of their supporting walls. The steel skeleton did not present itself to me then as a full-grown flower, but rather in the shape of a seed deposited in not unfertile soil. My idea was to reinforce the walls with iron beams placed vertically. Well, in 1883 Mr. Buffington had, as you may remember, the cream of the work of the West. The first thing I had to tackle was some trouble in the West Hotel, then under construction. One of the bay-windows had fallen down or something or other, and I 'flashed' my beam-reinforcement, but was pooh-poohed for my pains. But a little while later the Tribune building and several other big commercial structures were on the tapis. There the seed had taken root and was actually pushing up sprouts. I wanted to get the Tribune people into the notion of building a twelve-story structure and made the sketches showing cast-iron columns, bedded in a thin outer wall, with girders at each story, and the next story's thin outer wall carried on that line of girders, and so on up. This was termed 'crazy construction' by Buffington. But at the time there was rather a

skillful engineer there (who also later invented the tubular tunnel that has been so much infringed in subsequent times) named Strom, who figured up this construction very carefully, proposed a substitution of wrought-iron members for the cast columns and declared that such a building could be carried up and safeguarded against wind, etc., easily to twenty or twenty-two stories. In 1886 I severed my connection with Mr. Buffington and was succeeded by probably the cleverest designer of his day, Harvey Ellis. Strom was still there. In due course of time there appeared in the American Architect, I believe, or in another technical publication, a splendid picture of a twenty-five story building 'designed' by Buffington. People generally looked upon it as a wild-eyed scheme, and even I felt a bit ticklish about the twenty-five stories, but gave it no particular thought, treating it merely as a 'project,' but knew nothing of its being patented. Some years later I was surprised to see that suits had been filed by Mr. Buffington against several owners and architects in Chicago for infringing his 'patent.' Nothing came of these suits.

"And that, in brief, is the history of at least the Minneapolis end of the steel skeleton construction's conception."

* * *

Decisions of Interest to Architects and Builders

D*AMAGES Against Contractor for Abandonment of Contract Without Cause.*—A contractor for the construction of a dam and power plant at Spier Falls, on the Hudson River, abandoned the work before its completion without cause. The owner went ahead with the work and finished it, but in doing so incurred a much greater expense than that provided for in the contract. It was held that, in such a case, the owner is entitled to recover damages from the contractor, the measure of damages being the difference between what he would have had to pay the contractor, if the latter had completed the work, and the actual cost of finishing the work, providing the same was reasonable, and there was no clause in the contract fixing the amount of damages in case of abandonment. National Contract Co. vs. Hudson River Water Power Co., New York Supreme Court, Appellate Division, 103 N. Y. Supp. 640.

Liability to Laborer Injured While Putting Up Iron Work.—A laborer was directed by his foreman to assist in putting up the iron work of a building, and while one of the beams which had been wrongly placed was being reversed the laborer was injured in some unexplained manner. Up to the time when he was called upon to help in this part of the construction, the plaintiff had not helped to set any of the beams, and testified that he was ignorant, not only of the process, but also of the use of the appliances used in the work. It was held that it was the duty of the defendant, the plaintiff laborer's employer, to warn the latter of the possible danger that might arise while engaged in the work he was set to perform. It was also held that the defendant was liable under the statutes of Massachusetts, making an employer responsible in damages for an injury to an employe through the negligence of a person exercising superintendence. Reardon vs. Byrne, Supreme Judicial Court of Massachusetts, 80 N. E. Rep. 827.

Right to Recover for Extra Work on Building Contract.—A building contract provided that no extra work would be paid for unless ordered by the owner or his agent in writing, and unless the prices were agreed upon between the owner, or his agent, and the contractor. The contractor brought suit to recover compensation for work which he admitted was not covered by the original specifications and for which he had no written authorization, it was held that the owner, having ordered the work done, and received the benefit thereof, would not be allowed to hide behind the provision in the specifications, which had been disregarded by him as well as by the contractor, and the contractor was permitted to recover. Clark vs. Harris, New York Supreme Court, Appellate Term, 103 N. Y. Supp. 785.

Architect Not Entitled to Recover for Services in Preparing Defective Plans.—In an action by an architect to recover $500, balance due for plans for a store and loft building which he had drawn, the defense interposed was that the plans were defective and utterly unfit for use. The character of the services for which suit was brought is shown in the following language of the Court: "No dimensions were noted on them (the plans), and the figures and scales did not correspond, and they were full of omissions and inaccuracies. The plaintiff himself admitted that his plans were incomplete, and it appears from the testimony of an expert witness called by the defendant that such plans could not be used by a builder. The plaintiff further admitted that this was his first large job; that he had previously drawn plans for alterations only, and had never drawn plans from which a building was constructed." It was held that the owner was under no legal obligation to pay for the work. The undertaking of an architect implies that he possess skill and ability, including taste, sufficient to enable him to perform the required services at least ordinarily and reasonably well. It was also held that the fact that the owner had paid $100 on account to the architect did not constitute an acceptance of the plans, or a waiver of their defects, where the payment was made without knowledge of their shortcomings, so as to render the owner liable for the balance or any part thereof. Dunne vs. Robinson, New York Supreme Court, Appellate Term, 103 New York Supp. 879.

* * *

A Stonewall Jackson Story

"Stonewall Jackson," said a Virginia veteran, "used to tell a good story about a bridge builder.

"This bridge builder was called old Miles. He was very necessary to Jackson because the flimsy bridges on the line of march were continually being swept away by the floods or destroyed by the enemy, and in these contingencies Miles was a regular jewel. He could run you up a bridge in the time it would take another man to make the measurements.

"One day the Union troops burnt a bridge across the Shenandoah. Stonewall Jackson called old Miles to him and said:

" 'You must put all your men to work, Miles, and you must keep them at it all night, for I've got to have a bridge across this stream by morning. My engineer—an invaluable fellow, by the way—will draw up the plans for you.'

"Well, early the next morning, Jackson, very much worried, met old Miles.

" 'See here,' he said, dubiously, 'how about that bridge? Did the engineer give you the plan?'

"Old Miles took the cigar from his mouth and flicked the ash off with a sneer.

" 'General,' he said, 'the bridge is done. I dunno whether the picter is or not.' "

* * *

Working Overtime

A Chicago teacher gave a boy pupil a question in compound proportion for home work one evening, which problem happened to include the circumstances of "men working ten hours a day to complete a certain job."

The next morning the unsuspecting teacher, in looking over his pack of exercises, found one pupil's problem unattempted, and the following note attached to the page:

"Deer Sir, I refoose to let my sun James do his sum you give him last night as it looks to me like a slur on the 8-hour sistem, enny sum not more than 8 hours he is welcum to do but not more. Yrs trooly, Samuel Blocksky."—Success Magazine.



Bungalow at San Mateo

Designed by Mrs. Russell C. Smoot



Looking into the Sun Parlor. Bungalow of Mrs. Russell C. Smoot, San Mateo

A California Bungalow Designed by a California Woman

CALIFORNIA has many unique bungalows designed by skilled architects, but we know of only one such building designed by a woman who does not claim to possess architectural talent. Mrs. Russell C. Smoot has built beneath a wealth of foliage at San Mateo a bungalow of modest proportions that is so different from the average house of this type that it deserves more than passing mention. To begin with, it has no plaster whatever in its construction. The outside finish is of redwood shakes while the window and door jambs are redwood saplings with the bark peeled off but knots left. The pergola, also made of saplings, is covered with climbing roses.

The bungalow is severely plain and simple. The living room has a rough beam ceiling. The sides are paneled to a height of six and a half feet and covered with dark green burlap. The mantel is also made of heavy beams, a large Mission clock being built in the center, with gable effect to the ceiling. Back of the living room is a small sun parlor or flower room, having glass on two sides. The walls of the dining room are paneled to a height of six feet. The china closet is built after the old Mission style and the blue china-ware matches exquisitely the old Dutch blue furnishings of the dining room.

The woodwork throughout the house is perfectly plain and all the picture frames are made to match. The bedroom ceilings are panel work and the rough walls are covered with figured cretonne. The bathroom fixtures are of plain white enamel. The pantry and kitchen are planned to give every possible



Bungalow at San Mateo   Designed by Mrs. Russell C. Smoot



Looking into the Sun Parlor. Bungalow of Mrs. Russell C. Smoot, San Mateo

A California Bungalow Designed by a California Woman

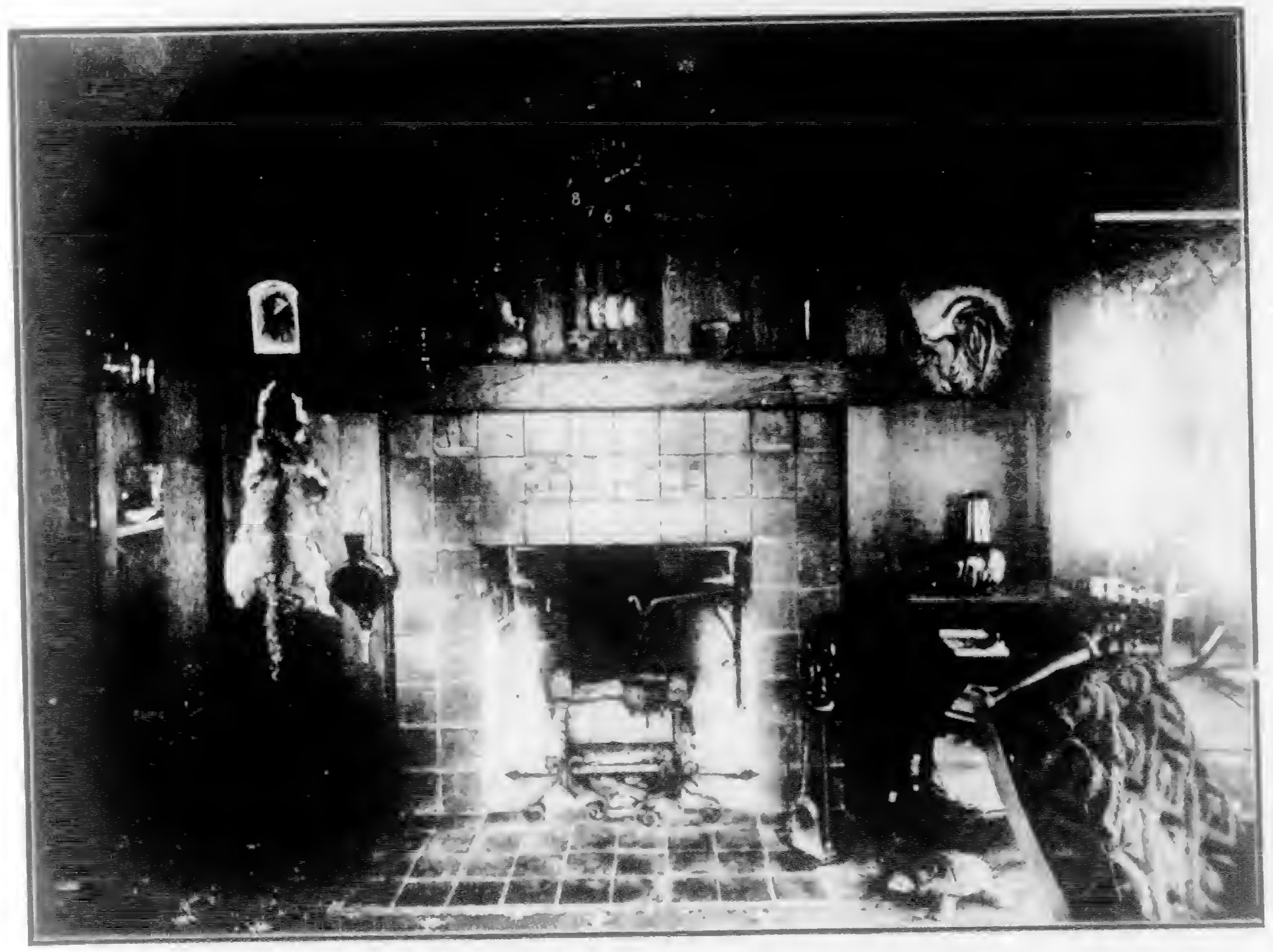
CALIFORNIA has many unique bungalows designed by skilled architects, but we know of only one such building designed by a woman who does not claim to possess architectural talent. Mrs. Russell C. Smoot has built beneath a wealth of foliage at San Mateo a bungalow of modest proportions that is so different from the average house of this type that it deserves more than passing mention. To begin with, it has no plaster whatever in its construction. The outside finish is of redwood shakes while the window and door jambs are redwood saplings with the bark peeled off but knots left. The pergola, also made of saplings, is covered with climbing roses.

The bungalow is severely plain and simple. The living room has a rough beam ceiling. The sides are paneled to a height of six and a half feet and covered with dark green burlap. The mantel is also made of heavy beams, a large Mission clock being built in the center, with gable effect to the ceiling. Back of the living room is a small sun parlor or flower room, having glass on two sides. The walls of the dining room are paneled to a height of six feet. The china closet is built after the old Mission style and the blue china-ware matches exquisitely the old Dutch blue furnishings of the dining room.

The woodwork throughout the house is perfectly plain and all the picture frames are made to match. The bedroom ceilings are panel work and the rough walls are covered with figured cretonne. The bathroom fixtures are of plain white enamel. The pantry and kitchen are planned to give every possible



Dining Room in Bungalow of Mrs. Russell C. Smoot, San Mateo



Mantel and Fireplace in the Smoot Bungalow, San Mateo



Living Room in Bungalow of Mrs. Russell C. Smoot, San Mateo

comfort and convenience. A gas range is situated in front of a large sliding window which is opened at meal time just enough to let out the odor of cooking. In the cellar is an instantaneous heater, having a circulating line to all fixtures.

Speaking of her home Mrs. Smoot said: "I made up my mind to build something different from the general run of bungalows and so followed out my own ideas entirely. I designed practically everything in the house. I was, of course, on the job constantly from eight o'clock in the morning till five o'clock at night and fortunately had a good mechanic as foreman who caught my ideas quickly and seemed to like being bossed by a woman. The shakes and saplings I had hauled from the redwood camps in the mountains. Our place is terraced and directly opposite the famous Haywood mansion which is being remodelled into a tourist hotel."

* * *

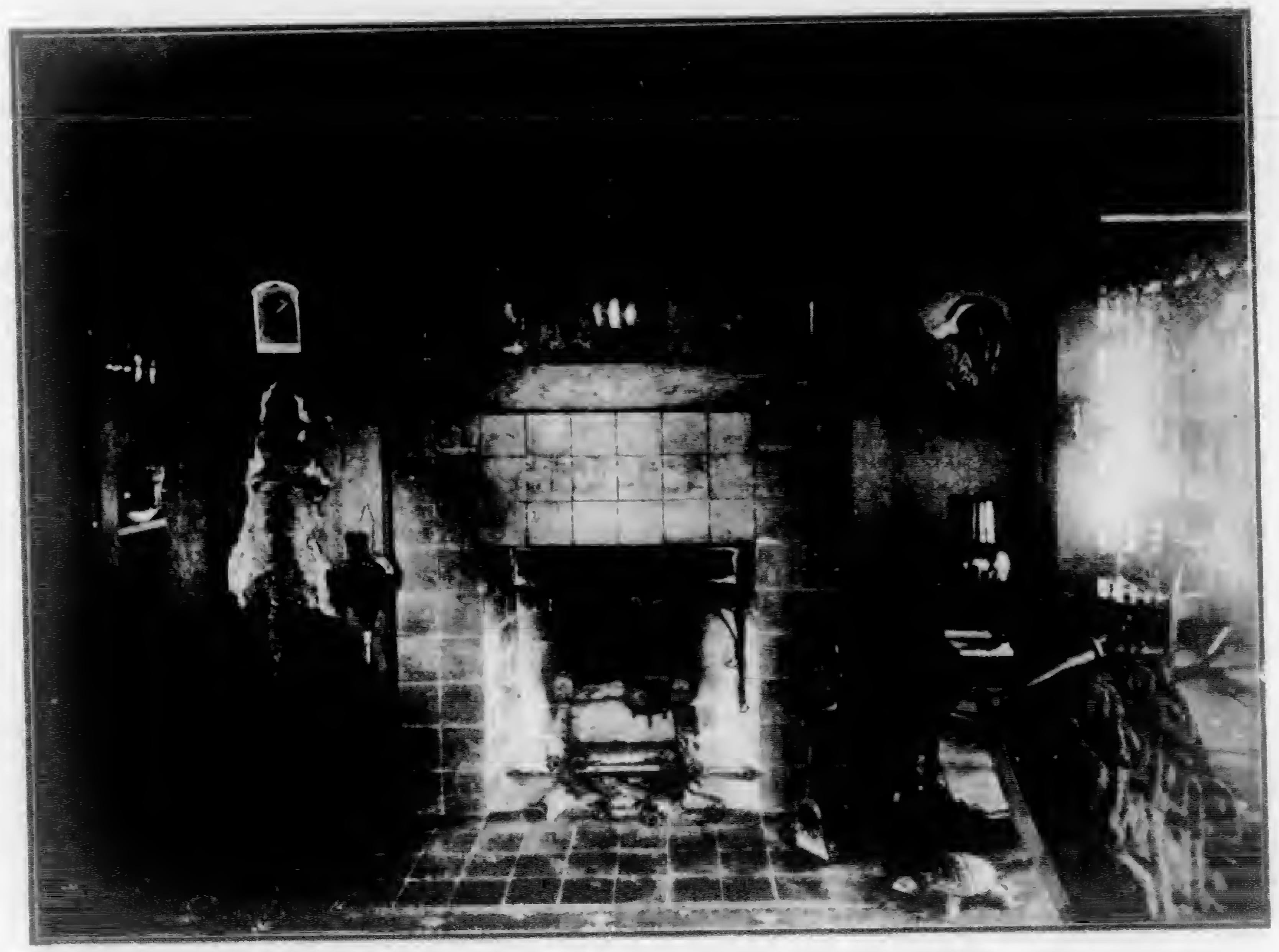
Mark Twain on Advertising

Mark Twain says: "When I was editing the Virginia City Enterprise, writing copy one day and mining the next, a superstitious subscriber once wrote and said he had found a spider in his paper. Was this good or bad luck? I replied to him in our 'Answers to Correspondents' column as follows:

"Old Subscriber—The finding of a spider in your copy of the Enterprise was neither good luck nor bad. The spider was merely looking over our pages to find out what merchant was not advertising, so that it could spin its web across his door, and lead a free and undisturbed existence forever after."



Dining Room in Bungalow of Mrs. Russell C. Smoot, San Mateo



Mantel and Fireplace in the Smoot Bungalow, San Mateo



Living Room in Bungalow of Mrs. Russell C. Smoot, San Mateo

comfort and convenience. A gas range is situated in front of a large sliding window which is opened at meal time just enough to let out the odor of cooking. In the cellar is an instantaneous heater, having a circulating line to all fixtures.

Speaking of her home Mrs. Smoot said: "I made up my mind to build something different from the general run of bungalows and so followed out my own ideas entirely. I designed practically everything in the house. I was, of course, on the job constantly from eight o'clock in the morning till five o'clock at night and fortunately had a good mechanic as foreman who caught my ideas quickly and seemed to like being bossed by a woman. The shakes and saplings I had hauled from the redwood camps in the mountains. Our place is terraced and directly opposite the famous Haywood mansion which is being remodelled into a tourist hotel."

* * *

Mark Twain on Advertising

Mark Twain says: "When I was editing the Virginia City Enterprise, writing copy one day and mining the next, a superstitious subscriber once wrote and said he had found a spider in his paper. Was this good or bad luck? I replied to him in our 'Answers to Correspondents' column as follows:

"Old Subscriber—The finding of a spider in your copy of the Enterprise was neither good luck nor bad. The spider was merely looking over our pages to find out what merchant was not advertising, so that it could spin its web across his door, and lead a free and undisturbed existence forever after."

Some Engineering Lessons of the San Francisco Disaster*

By J. L. VAN ARNUM, C. E.

THE modern city is the creation of commercial needs, and its location is fixed by commercial conditions. The duty of the structural engineer is to so plan all parts of the structure that it shall resist (1) with certainty all definite calls upon it; (2) with no serious injury all probable calls upon it; (3) and without destruction all those occasional visitations that human power can resist. Grouped under the first heading are the live-load, dead-load and the ordinary wind-load requirements, etc.; under the second heading would be grouped such occasional attacks as those of fire, gales and moderate earthquakes in earthquake regions; under the third head occur such disasters as hurricanes and tornadoes, general conflagrations and severe earthquakes, such as at times appall humanity in disasters that are made possible by reason of inadequate design or construction (or both), permitted in order to save a small percentage of expense, but thereby hazarding the integrity of all, with the gambler's chance of some gain or great loss.

Successful resistance to earthquakes, even when severe, is possible; but as this concerns most cities only remotely, it will be passed over with the statement that unified foundations structurally carried to solid material, with a thorough swaybracing frame, will preserve the integrity of a steel building in any probable earthquake; even in masonry walls, bands of metal reduce to small proportions the damage to them from seismic disturbances. It is mainly with the fire lessons that we are concerned, because they are of universal interest and application. It is true that, often when discussing these lessons, we hear the remark that the Baltimore and other fires teach the same facts; but if we analyze more deeply, we must conclude that the San Francisco lessons are unique in giving us generally the effects of fire only, while nearly all others have left the added destructive action of water and steam upon the highly-heated fire-resisting materials.

The main study, then, will be that of different engineering materials with regard to their earthquake-resisting and fire-resisting properties. In view of the general conditions found to exist in San Francisco, as developed by his careful inspection of the city, the writer would impress with all the earnestness at his command the absolute necessity that good construction must follow a good design, or the result is a failure. Faulty design may be partly or wholly redeemed by excellent construction, but a thoroughly good design may easily be utterly ruined by defective construction. These facts are not at all new, but they are so evidently often obscured or ignored that it would be well if they might be impressed with all the vividness of a new thing. The engineer should always see to it that his design is constructed of adequately good materials and executed with the necessary skill and character of workmanship.

Passing the discussion of foundations (not because they are less important than any, but because the superstructure is most exposed to the destructive agencies under discussion), it may be said that wood resists earthquake vibrations well, if the frame and roof are properly tied and braced; the almost universal practice is to ignore such bracing, and then the result is a collapse. In fire, wood, of course, "adds fuel to the flames."

* A paper read before the Engineers' Club of St Louis.

Masonry walls of all kinds resist earthquake usually without destruction if well built, generally with considerable damage; the effectiveness of resistance is enormously increased with but little extra expense by improving the weak part of the wall—the mortar—by putting into the mortar a large proportion of Portland cement*; and a further effectiveness of resistance may be secured by metal ties and bands. Against fire, even without the rupturing and exploding action of water from the fire streams striking highly-heated materials, stone of practically all varieties spalled and disintegrated badly and in varying degrees, enough to require its replacing for the sake of appearance even when it was not structurally incapacitated.

In buildings in which steel enters as an essential structural element, more attention must be given to lateral bracing and to connections to make the structure safely resistant to earthquake vibrations. A more definite lateral stability must be furnished, with less reliance upon the indefinite internal rigidity of the finished structure.

In fire, the particularly vulnerable point of buildings of the first class remains the inadequate protection usually made against the introduction of fire from the outside, through windows, doors and inadequately designed roofs which quickly burned away. The protecting effect of metal shutters and metal covering of window trim was great, increasingly so as its character was better, and often so decisively effective as to permit the saving of the building at critical times, as the Kohl building. Even without such protection the decided advantage of wire-glass was shown in a number of cases, as that of the Western Electric Company's building. Although the heat shatters the glass, the wire holds the pieces in place in most instances, so that the flame cannot enter; and although it has the defect of diathermancy, even a weak defense inside may overcome the danger arising from the transmitted heat. It has become evident that, in general conflagrations, fireproof buildings are the innocent victims of outside attack rather than the cause. The conclusion is then inevitable that a very great need in improving conditions is adequate protection of exterior openings.

Passing without comment some of the lessons driven home by resulting failures, such as the necessity of adequate and correct connections, thoroughly good riveting, good bond between facing and backing, properly constructed partitions, etc., the general fact is noted that terra cotta offers much less effective resistance to fire than does reinforced concrete. I can tarry on this lesson only long enough to state that this reference is, of course, only to good materials, well fabricated; and in this connection it should also be stated that critical examinations have indicated grave danger of the gradual scattering corrosion of metal embedded in cinder concrete.

There probably is no more important or instructive lesson to be drawn from this disaster than the imperative necessity of adequate protection of essential metal, whether this metal be a steel frame or steel reinforcement of concrete construction; and a considerable advance has been made in determining with much greater definiteness the details of such requirements. San Francisco's revised building laws, as approved on July 5, 1906, permit of the use of brick, metal-lath and plaster, terra cotta and concrete. Brick of proper quality furnishes good protection if the minimum covering of the most exposed metal is at least four inches, and the mortar is of Portland cement. Metal-lath and plaster may, with care, be

* The Appraisers' building, which survived without a crack, was built with brick laid in cement mortar, and is said to have had a monolithic concrete foundation six feet thick capping the foundation walls.

made efficient, but the wisdom of its permissive use seems to the writer to be doubtful, because of the requirements for efficient resistance are so easily slighted; the fact remains that a noticeable proportion of failures in San Francisco were due to a sham application of this kind of protection.

When terra cotta is used, the minimum protection should be at least two inches for beams and girders and four inches for columns, with especial attention given to proper mortar and to metal ties. It must also be remembered that, where the heat is great, the outer web of terra cotta blocks shears off and fails, due to the excessive differential expansion of this outside web even when water from fire streams does not add its rupturing effects by cooling suddenly the highly heated surfaces; this usually means the preservation of the integrity of the steel frame, but does necessitate an entire reconstruction and replacement of the ruptured terra cotta.

Concrete or reinforced concrete of good quality both protected the structural metal and usually avoided the necessity of reconstruction (because the injury to it was superficial, not radical), except when the thickness of this protection was insufficient. In cases where the embedded, protected steel reached within an inch or so of the surface, the fire conditions often ruptured off the thin protecting layer of concrete, leaving the steel exposed. This is especially liable to occur on the under side floor-beams and girders, where the embedded rods are so near the surface that the highly heated covering differentially expands considerably as compared with the concrete above the steel, leaving an easily ruptured section in the plane of the reinforcement where the bars are so numerous as to greatly reduce the area between them of the concrete connecting this outer protecting layer with the mass of concrete above the reinforcing steel.

It is believed that three or four inches of covering for the metal is as necessary for reinforced concrete construction as for column coverings of brick or terra cotta in order to give columns adequate fire-protection. Tending to confirm this opinion is the fact that as a general proposition, in a temperature of 1200 to 1500 degrees Fahr., heat will penetrate concrete to a depth of two inches, enough to raise its temperature to 500 degrees Fahr. in less than an hour, while it takes perhaps three hours for this temperature to penetrate four inches; this is significant because noticeable loss in strength occurs at about this temperature, which increases rapidly for higher temperatures. For evident reasons the regulation of the item just mentioned must be covered by the building laws of cities in order that it may be made effective, as in the case of so many general requirements necessary for the public safety and welfare.

Hitherto it has been considered that a point of especial vulnerability is the lower flanges of beams and girders. While this fact essentially remains true, it seems that, relatively, more attention must be given to the adequate protection of columns, inasmuch as the failure of one of the lower columns involves not only theloss of it, but also the letting down or destruction of everything above it. The most prevailing cause of destruction and loss is in the San Francisco fire, caused by a single class of weakness developing, was due to the partial or complete failure of basement or lower-story columns exposed to the fire by the destruction of their fireproofing.

I would add, in closing, one reference that concerns engineering in its commercial and business relations. The adequate protection of essential members from fire will add a small per cent to the cost of a building over its cost if partially protected. This amounts to a few thousand dollars, which looks large to the firm paying for the structure; consequently, as a rule, the firm will take the risk of destruction for the sake of saving this extra initial expense. Were the small additional expense of thorough fireproofing assumed, it would not only decrease the hazard to the owner, but would make the structure a safer risk to insurance companies. Unfortunately, fire-insurance companies will not make public such statistics as they have, giving relative losses on different types of buildings. Yet it is believed that their relative losses on buildings of the first class are much less, proportionally, than is indicated by the somewhat lower insurance rate now prevailing for such buildings. In other words, the reduced hazard secured by thorough fireproofing and fire-protection ought to secure to the owner an insurance rate so noticeably lower that this saving would go far toward compensating him for the extra expense in securing this increased safety. This reduction in rates might well be made still greater when fireproofed buildings are compactly grouped, thus mutually protecting one another. Engineers, architects, insurance men and men of business would probably find that united consideration of this subject would lead to a mutually beneficial adjustment of these interests on the lines indicated.

* * *

Folly of Taking a Dare

FATHERS, forgetting that they themselves have been boys, often try to persuade their sons that nothing is more foolish and less manly than undertaking to do an absurd thing because they have been "dared" to attempt it. It looks very much as if architects, like boys, found it impossible to "take a dare" and interpreted the erection of each new skyscraper as a direct challenge to build one that would be more altitudinous. The latest architects to resent the imputation on the actual color of their livers and the plumage they affect are two who operate in Pittsburg, and it is said to be their present hope to be able to manifest their skill and courage by erecting a building seven hundred feet high, though we conceive that they will signalize rather the vulgarity of their artistic perceptions and the undeveloped condition of their imaginative faculties. To do a thing simply because it can be done is an extremely poor reason for doing it: if it were a good and valid reason, then it would be proper to begin at once to cut a ship-canal from Sandy Hook to the Golden Gate, or to extend the proposed skyscraper to a height of seven thousand feet instead of stopping at the lowly seven-hundred-foot level. A condition that makes the alleged enterprise especially obnoxious is the fact that the site selected for this new manifestation of the surrender of the art of architecture to the science of engineering is now occupied by Richardson's Allegheny County Court-house, against whose suggested alteration, even, most of the architects in Pittsburg and a very large number of those practising elsewhere protested vehemently, as being a "desecration," two or three years ago, and it is quite possible that the names of the architects of the proposed skyscraper might be discerned in the list of the said protesting architects.—American Architect.

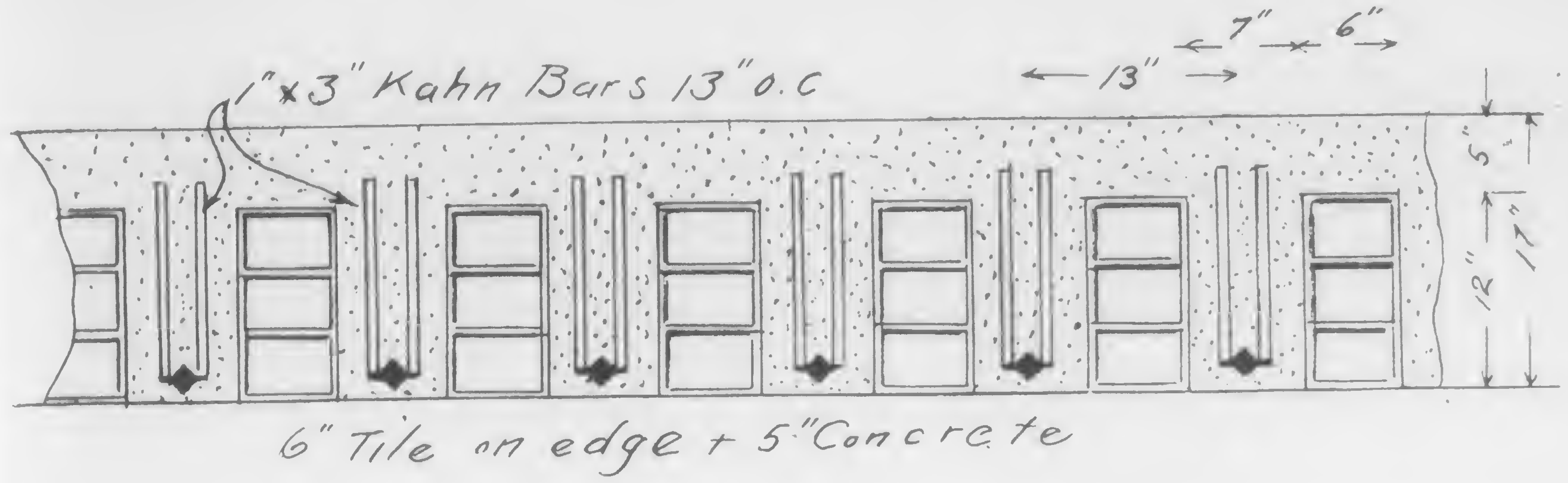


Apartment Flats for L. T. Smith, San Francisco
Stone & Smith, Architects

Unique Apartment Flats

THE above illustration shows five unique apartment flats being erected for L. T. Smith upon a sloping lot on Sacramento street, San Francisco. The buildings are of the mission type modified to suit modern ideas of convenience.

The grounds are laid out in terraces, the first or street terrace being in lawn and surrounded by palms, etc. The second is a formal garden, semi-enclosed, the walks and gardens being paved in large fire tile of a warm brownish red, with bay trees and a circular center garden of red geraniums. Each apartment is supplied with an abundance of flower boxes, balconies, etc. The exterior walls are to be finished in Klinker brick and cement, with solid redwood beams and cornices left natural. Bright red tiles form the roof, making a very happy color combination.



Notable Reinforced Concrete Test

UNDER the direction of Architect Theo. A. Eisen and Contractor E. F. Low, a notable reinforced concrete floor test was made July 23 at the Boston Store annex, now in course of construction at 240 South Hill street, Los Angeles. The test was made on a twenty-five-foot clear span on the first floor, without any intermediate beams to assist it in supporting the strain. On a space twenty-five by nine feet was placed a load of 213,750 pounds, or more than 106 tons, under which the deflection was only an eighth of an inch. The pressure was equal to 950 pounds to the square foot.

This is said to have been one of the most severe tests to which a reinforced concrete floor ever was subjected. The specifications call for a floor capable of sustaining a weight of only 300 pounds to the square foot, or less than one-third the amount placed on it. The city inspector's requirements are that a floor of this kind shall not deflect more than half an inch while supporting a load of 500 pounds to the square foot.

Anent the test, Heber & Thayer, who represent the Kahn trussed bar, used for reinforcing the span, write as follows:

"The span tested was twenty-five feet long and nine feet wide. This nine feet was taken directly in the middle of the span between the columns; the reason for making the span only nine feet wide being to economize in the amount of material used. The material used was brick, so piled that there would be little or no arch action. The bricks were piled to a height of a little over nine feet, making a total load of 213,750 pounds, or 950 pounds to the square foot. The deflection in the center of the panel after the load was placed, was only one-eighth of an inch. This load has now been upon the floor for three days and the deflection at this writing is only slightly in excess of one-eighth of an inch.

"The City Inspector of reinforced concrete was present while the load was being placed upon this panel and until it was finished, and he verifies all of the statements made."

* * *

A Similar Experience

"Do you really believe that an ass ever spoke to Balaam?" queried a man who prided himself on his superiority to the old beliefs. Coleridge, to whom the question was put, replied: "My friend, I have no doubt whatever of it, I have been spoken to in the same way myself."



Sing Fat Building, Chinatown, San Francisco
Equipped with Otis Elevators
T. Patterson Ross, Architect *A. W. Burgren, Engineer*

Chinatown Architecture

ARCHITECTS and owners are co-operating splendidly in an effort to rebuild San Francisco's Chinatown in a manner that will be charactertistic of Chinese architecture. Several buildings designed along Oriental lines have already been built and others are under construction or being planned. T. Patterson Ross, architect, and A. W. Burgren, engineer, have utilized their best endeavors to design a structure that would combine the practical and business requirements with the Oriental features in exterior appearance and ornamentation. How successful they have been one needs only to look at the picturesque drawing accompanying this article. The building will occupy the northwest corner of Dupont and California streets, It will be four stories in height with an exterior of yellow pressed brick, ornamented with green glazed terra cotta. Lofty pagodas and ornaments representing the native dragon will add to the Oriental appearance of the building. The interior of the Sing Fat building is to be fitted up in a style of Oriental magnificence surpassing any building on the continent, and will be illuminated by several thousand incandescent lights.

Bricks and Brick Work in Architecture*

By ARTHUR PEABODY, Supervising Architect, University of Wisconsin

IN SPEAKING to you, gentlemen who are practical brickmakers I feel there are many things about bricks that you know and I do not. The point of view from which I know bricks and from which I can speak, is that of the architect only. The architect knows of them as the finished product. He is acquainted with their value in architecture. How architecture is sometimes misunderstood by the casual observer. It is closely bound up with building. The architect expresses himself in buildings and yet he is not a builder. In fact, some architects limit their work to preliminary designs, or schemes of buildings, and do not produce the actual building at all, leaving that to what may be called the ordinary practitioner. Their work is purely advisory and general in its nature and stops with the arrangement of the main elements of the plan and the architectural treatment of the exterior and interior, without considering in detail with what materials the work shall be executed, nor at what cost. Their work, however, is supremely important, being, in fact, that which makes the building excel another of similar capacity and cost.

Architecture is the human element in building. It is what gives dignity, grace, harmony, or we may say character, to an otherwise uninteresting pile of masonry. Beauty is said to be only skin deep, but who can endure the sight of a creature without that external covering which is so closely knit upon it, that to lose it, means certain death?

For this reason such qualities in brick as color, texture, form, are of the highest architectural value. A brick possessing great durability, high resistance to crushing and other good elements, may fail architecturally because it will not give to a building the higher qualities above enumerated.

One of the advantages of clay bricks is the great number of pleasing colors produced in burning. Another is the possibility of treating the face of the brick with another clay capable of burning to a good color, although the body of the brick is poor in this regard.

Some years ago great effort was made to produce bricks of absolutely even color and perfect geometric form. The results in the wall were monotonous in the extreme. Especially was this the case where the joints were thinned to one-eighth of an inch.

It is recognized today, that not one brick, but the whole number of them when built into the wall, together with the coloring produced by the mortar joints, is what gives the color value in the building. To this end the effect of dark headers is considered carefully by the architect, and the brick are laid in such a bond as will best accentuate the work.

So also the stone trimming about windows, entrances, and other parts, goes to modify the general tone of the building.

Besides color, the important thing is texture. In some parts of the country bricks known as "rain drops" are produced by weathering the bricks to a rough surface before burning. The resulting wall has a very pleasing rustic or rough texture. This is quite opposite to the glassy surfaces of some paving bricks, which are very difficult to manage, architecturally. Aside from this, paving bricks are quite satisfactory on account of the variety of quiet colors and their impervious surface that is free from efflorescence. This matter of efflorescence or "whiting" is wholly dependent upon a porous structure of the brick that absorbs the rain water and gives occasion for it to dissolve various salts from the mortar. Upon the evaporation of this water the salts crystallize upon the surface of the brick.

Proof of this has been shown by chemical analysis of the brick that exhibit no internal trace of the salts deposited upon their surface. Further proof is

* An illustrated lecture delivered before the Wisconsin Clayworkers' Convention, 1907.

shown from the fact that sandstone of a porous nature will show the same sort of efflorescence, although no such salts are natural to the stone itself. So, too, floor tile will "bloom" when relaid in fresh mortar.

Form is important, as between the "standard" shape and the long thin Roman brick. Absolute accuracy of form is very much less important, especially when thick joints are used.

The matter of joints is subject to fashion or "vogue," varying from one-eighth of an inch to one and one-fourth inches thick, as shown in some Italian work.

Brick work as an accentuated feature of a building detail is a modern use of the material. In Roman buildings, brick were used only for the wall mass, and most frequently were covered with a cement or stone facing. They were common brick.

Their excellence is attested by the solid character of Roman ruins, such as the baths of Caracalla and other similar buildings. It is but fair to say, that much of this solidity is due to the Roman cement or Puzzollana, in which the brick were laid. This deposit, laid down in past ages by the volcano Vesuvius, was the Portland cement of the Roman world. Its exact nature was unknown until long after the invention of artificial "Portland."

Today, blast furnace slag, essentially the same thing as lava, is made the basis of some of our best cements. In the West also, where the United States Government is constructing dams for irrigation purposes, the same Puzzollana is found and is made into "Portland" right on the ground.

The English recognized the possibilities and limitations of brick work as perhaps no other nation has. One of their cardinal principles was, brick for the wall mass, stone for accentuated parts. They required brick of good quality, good workmanship, close attention to such details as color, form and texture. Various bonds were employed which have become well known in America and there is an avoidance of the fantastic shapes and intricate decoration that sometimes defeat the Italian and German, not to say the French brick architecture.

Brick work in this country has made great advances in recent years. This is due primarily to improvement in the artistic quality of brick. The right appreciation of this by architects has resulted in greater demands upon the workmen for skill in laying, and so the brick building which forty years ago was classed as secondary, compared to those of stone, has taken at least equal rank with them.

Examples of monumental buildings of brick can be cited in any of our great cities. Probably the best models are to be found among the palatial houses of rich men, along with university buildings, churches, and some of the bank buildings in our Eastern cities.

Not only is there today an excessive demand for brick of first quality for all ordinary purposes, but brick has now a vogue, a prestige that it never enjoyed before.

It is the material against which least can be said, either from the artistic or the practical side. Of course, this applies only to the wall mass.

For mouldings, cornices, etc., in short, all distinctly decorative features, stone or terra cotta is necessary. With brick goes also tile, a natural complement as regards the roof. The same qualities that recommend one apply to the other.

Color, texture, form, all variable at the will of the maker. Useful, that is to say, "working values," equal to brick.

In all this discussion, wearing and enduring qualities have been pre-supposed, just as honesty and morality are taken for granted in the consideration of a man's fitness for places of dignity and honor.

The Professional Practice of Landscape Architecture

By WILBUR DAVID COOK, JR.

SO LITTLE is known throughout this section of the country relative to the professional practice of Landscape Architecture that a short article may prove of interest to your readers, showing the relation of the landscape architect to his client, to the architect, engineer, gardener, nurseryman and contractor.

From the landscape architect's point of view he should be the first to be called in. The time for a client to call in the landscape architect is before he has purchased a foot of ground, be it a city lot of fifty by one hundred and fifty or a country estate running into acreage.

The reasons for this are almost too numerous to mention. A few, however, will suffice. In the first place the landscape architect is in most cases a better judge of soil conditions than the average client. He is also a better judge of the possibilities of the development of a chosen site; of the value of existing topographical features, ledges, trees or shrubs, etc.; value of views, and the amount of land necessary to be purchased to carry out a comprehensive scheme for its future development to the fullest advantage. His training has been such that he sees much that is ordinarily overlooked.

Usually he is not called in until the client finds himself in a hole and wants some one to pull him out. Under these conditions all that remains to be done is to make the best of a bad proposition.

He sometimes finds that his client has a house perched upon a hilltop with an almost impossible approach road zigzagging back and forth in the foreground and benched into the hillside, with sharp turns supported on one side with railroad embankments and on the other by a deep, heavy disfiguring cut. The house itself may be fine architecturally, but not suited to that particular location. For instance, a house that may look well on a level piece of ground, may be entirely out of place on a hilltop. Another very common mistake is that enough ground has not been purchased to develop the property to the best advantage.

The landscape architect does not pretend to tell his client that he must have a certain style of architecture, but he does suggest, in a general way, the type of house best adapted to the situation, perhaps in this particular case a low squatty house of a rambling character, made to look as though it had grown on the site and had become as firmly rooted to its location as an adjoining boulder.

When the site has been determined the landscape architect recommends that a competent engineer be called in to make an accurate topographical map of the property, showing contour intervals for every foot of elevation, in some cases for every five feet, from specifications which he furnishes the engineer. A map of this kind is also of great assistance to the architect.

A survey for the purpose of landscape development is an entirely different proposition from the usual survey. It calls for information almost invariably left off by the surveyor, and this is another reason why the landscape architect should be called in before the survey has been made. Such information he has to have and it is much more economical to secure it at the time the original survey is made rather than to have to have it added subsequently.

Some clients absolutely refuse to have a survey made, deeming it an unnecessary expense. It is best in such cases to refuse to have anything to do with the work. The landscape architect is not a wizard and he will save himself endless annoyance by turning down this kind of a client. The client's point of

view generally is that he only intends to carry out a little work this year and a little next. Even so, it is best for him to have the entire property surveyed, and to have a comprehensive plan prepared, covering the entire work. This does not prevent the carrying on of the work from year to year, as circumctances permit, and in the end he has a unified result that is worth while.

A few clients purchase their property, have it surveyed, have a plan prepared, and establish their border plantations from one to two years before building. It takes longer for plants to grow than it does to erect a building under normal conditions.

The topographical survey is used as a basis for all subsequent work. A preliminary sketch plan is first prepared, establishing tentatively all the proposed floor elevations for the various structures, the design for the layout of the property, etc. This plan embodies the suggestions of the landscape architect for the development of the scheme, together with as many of the client's ideas as may be consistent with good landscape design.

He indicates by a block sketch, the location of the living rooms with reference to the views, of the service arrangements with reference to the prevailing winds, the house location in relation to the boundaries, approach drives, service drives, garages, lodges, etc.; showing, also, where border or screening plantations are desirable to frame in or cut out certain vistas, retaining walls, arbors, pergolas, pools, summer houses, basins, fountains, and hedges.

The architect should now be secured. There is no objection to having him from the first, provided he is the right sort. His suggestions are many times of great value to both the client and the landscape architect. Assuming, however, that he has not been called in, whom shall we employ? Usually the client has his own ideas on this subject; if not, and the landscape architect is requested to suggest some one, he will do so. If a certain type of house has been decided upon a specialist upon that type is usually suggested.

The preliminary plan is then gone over with the client, architect and landscape architect and approved or revised as the case may be. The architect is then requested to prepare plans, and the landscape architect working drawings. These working drawings consist of grading plans, profiles of walks and drives showing proposed grades and cut or fill, and cross sections taken at typical points. With these plans, estimates are prepared of the amount of earth to be handled and the disposition of the same upon the property. Should the amount of cut or fill prove excessive a revision of the plans becomes necessary to make the quantities more nearly balance. All of these details being worked out on paper the client knows in advance what he is up against.

With the approval of the grading plan, contracts and specifications are written and submitted to two or three reliable contractors for bids, if the work is to be done by contract.

When the contract has been let the landscape architect prepares planting plans. This planting plan shows the character of the trees and shrubs to be used, together with the location of each individual specimen and the quantity of same. With the approval of this plan planting lists are made out and sent to local or foreign nurserymen to be filled. All plants are furnished to the client at cost and billed directly to him by the various nurserymen, the bills, however, being made out in duplicate and forwarded to the landscape architect for approval after the shipments have been checked up. The landscape architect does not make a profit on nursery stock, nor does he assume any responsibility for the payment of such bills.

Upon receipt of the nursery stock ordered the client notifies the landscape architect of its arrival, who in turn instructs the gardener as to its disposition either direct to its final location or to be heeled in at designated points until wanted.

Many clients as well as architects have the mistaken idea that the landscape architect superintends the work. This is not so. He only supervises it from time to time as may be necessary with reference to matters of design. He is not even the agent for the owner, but is engaged solely as his professional adviser.

Some of the Eastern architects used to draw a line about all purely architectural constructions and say keep off, we desire to control these features ourselves. The landscape architect has no inclination or desire to invade the field. The acquisition of either profession is a life-long study, but he does want some say in the matter and the best results are achieved by working in harmony with each other. It is only natural that they should work together, as the combined work will be judged and approved as a whole or condemned.

In justice to the architects it must be said that in self-defense they have sometimes stepped over into the realms of an unfamiliar profession rather than to leave their work in the hands of the average gardener.

In closing it may not be out of place to note the difference between the architect's charges for his professional services and those of the landscape architect. Most clients are familiar with the charges of the former, which are based on a percentage of the cost of construction. The landscape architect charges for his professional advice and not on the cost of executing his work.

It seems difficult for an adviser whose compensation increases exactly in proportion to the increase in the cost of the execution of his work, to at all times prevent the suspicion arising in the minds of his clients that the many good things or the good way of doing things he may have occasion to recommend from time to time, are advocated partly, to increase the earnings of the adviser. Moreover, the value of the ideas embodied in the preliminary plans of a landscape architect varies much more widely, in different cases, in relation to the cost of execution than it usually does in the case of works of architecture, so that a fixed percentage on cost of improvements is not a satisfactory way of determining the designers compensation. For instance, two alternative plans for the approach drive on a particular country place may be so similar as to length and landscape advantages as to be worth the same professionl fee, yet it may cost two or three times as much to execute the one as the other, because of the larger amount of rock excavation called for, or because of some other topographical feature.

The landscape architect charges a professional fee for a preliminary visit to the property. What his charges will be for the subsequent development of the property depends entirely upon the size of the place, or difficulty of the problem involved. He will not, if he is conscientious, charge as much for a commonplace problem as he will for one which calls for greater skill and ingenuity in solving.

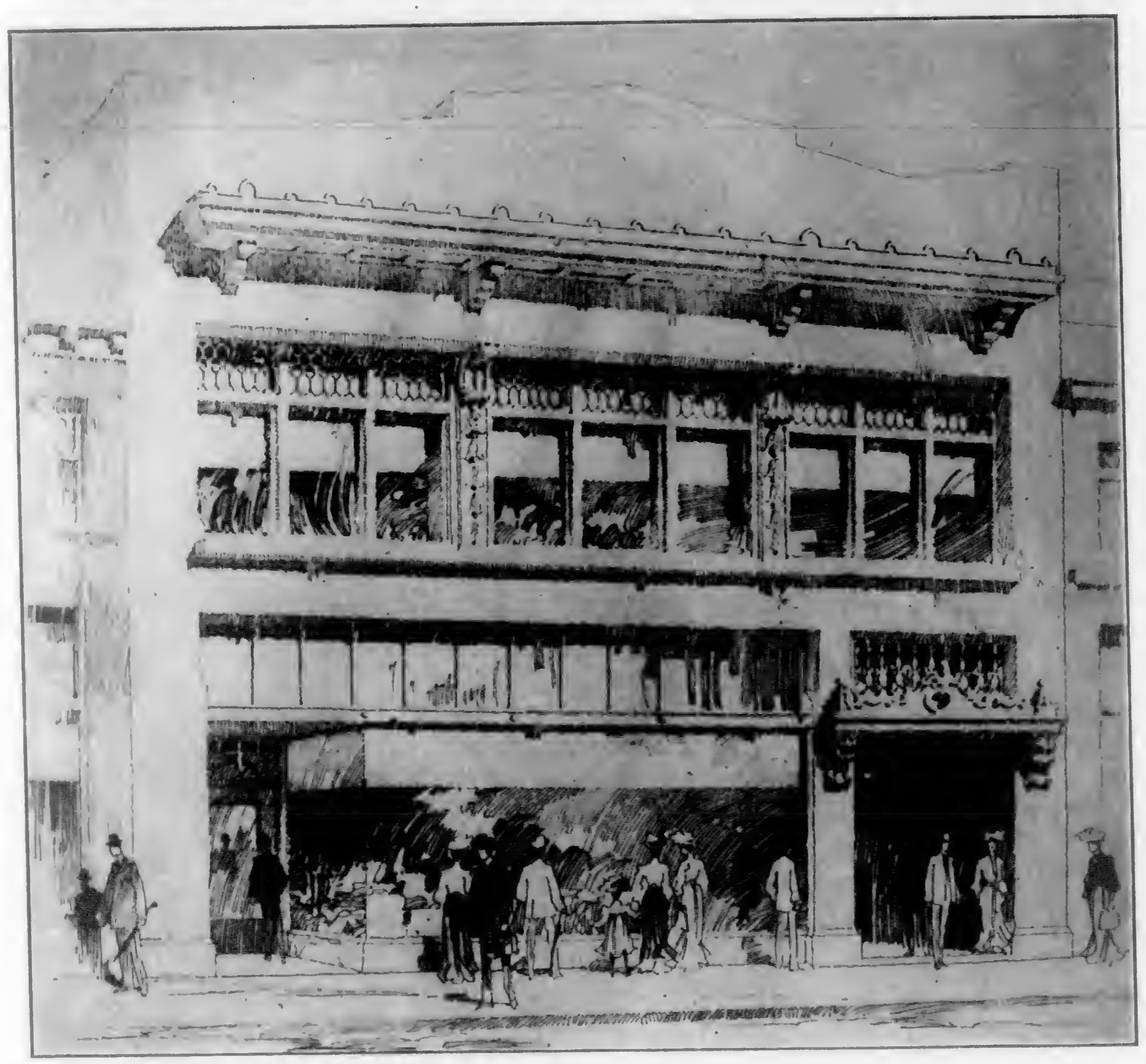
* * *

Resuscitated Eggs in Food

The miracle of the resuscitated egg I heard from a saleswoman with whom I worked for a season, writes Elizabeth Westwood in Good Housekeeping. She had been employed in a big wholesale bakery and knew much of crooked methods. This practice she told me was also in vogue among many of the domestic bakeries whose standing was questionable. At her factory, eggs had been bought in big tubs, already shelled. They were old stock, fast on their way to decay, and had been secured by a shrewd firm for almost nothing from the small dealers. The rejuvenators had shelled them with a patent egg-breaker, and preserved them with boric acid. She herself had known them kept on hand for months and they were guaranteed to last for year and a half, in a perfect state of preservation.



Store for McCann, Allen & Co., San Francisco *Houghton Sawyer, Architect*



Building for the O'Sullivan Estate, San Francisco *Houghton Sawyer, Architect*



Building for F. M. Green, San Francisco
Houghton Sawyer, Architect

In Perfect Agreement

Tender-Hearted Maiden Lady—It's a shame to go out and kill dear little birds! I could not do it!

Hunter (looking sadly at his empty game bag)—Neither could I.

* * *

Wait Awhile

Daughter—What! Mother, do you mean to say that I must marry that horrid Mr. Jones? I hate him, I detest him, I despise him!

Mother—But, my dear, you can tell him all that after you are married.

The Architect and The Painter

INSTEAD of regarding architects with dislike or suspicion, they should be considered the best friend the painter ever had, writes Henry Fenelon in the Plumber and Decorator. Let us look at it this way. Suppose no certain materials were specified. You are a master painter, one who takes the greatest pride in your work. No matter, therefore, how keen the competition, you will have in your job naught but the best materials by first-class makers. You are asked to give a price for a job. Little Stiggins, the painter, or Slasher, the decorator, is in against you. Either or both use the shoddiest materials. Well, when the tenders are opened you are simply "miles out"; you've "no earthly," and your prices have been the cause of unbounded merriment to the architect. Indeed, when he saw your price per yard he suggested to his chief clerk that the enjoyments of Whit-week had certainly caused you to forget the rudiments of arithmetic!

As I say, instead of growling because the architects are day by day still more stringently exercising their authority, we ought indeed to rejoice, for the stricter they are the fewer Slashers and Stigginses there will be in the trade, and you, the respectable employer, will—and it's about time—be able to demand a good price for good work and good materials.

Let me give you two instances; the first, a job under an architect who, while the work was in progress, was away. He had specified a certain well-known water paint to be used on the interior of a large new house. Several were in for this and, as usual, the lowest price was successful. Instead of this particular water paint being used from start to finish, the walls were twice coated with ordinary fast-bound distemper and once with the water paint. On the architect's return the job looked all right, and the colors on comparison with the firm's color card were excellent and a perfect match. In a few weeks the whole began to shell and peel off. The architect, by a very simple test, discovered the fraud. In vain the painter solemnly averred he had used the right material. The chemical test was enough, and every ounce of distemper and water paint had to be removed and the whole of the work redone at a cost borne by the painter. Not only that, but the floors, having been wax-polished, had to be done again, as also the skirtings and architraves, which had been finished white enamel.

Now, had not this fraud been discovered by a competent architect, who specified certain materials, the painter would have got off scot free to again compete with a decent chap like you; and from this you will see it was simply useless for you to waste ink, paper and time against him.

Another instance where an architect was not in evidence. This very same water paint the tenant was particularly anxious to have, and agreed on a certain price. The water paint was, for the sake of profit, adulterated with nearly half as much whiting, one room (red) being entirely ordinary distemper. Result—in less than six months a most horrible job. The contractor was called on the scene, and, relying on the ignorance of the tenant (a fruit merchant), stoutly declared he had used the material, and he produced his account for same. Just so; but that material had been used on another job, where an architect had specified it!

Now what is the result here? The tenant, disgusted with the look of the "water paint," has had two rooms papered, and is about to do the same with the others, and he says he will strongly advise his friends not to have this special paint in their houses.

Let me briefly give you a third instance. A house not a hundred miles from, let me say, Blackpool (that isn't really the town, but it will serve). No architect on this job. The tenant asked for this special water paint in every room and paid for it. Instead she got ordinary size distemper. Result, as usual, disaster! She also says she'll warn her friends never to have the material in their houses!

Now do you not see from these instances—and I could multiply them by the score—that if architects were in command, and vigilant and ready, such things could not occur? Moreover, there would be an absence of that worried look which is aging you so rapidly; for the wretched competition attributable to such practices quoted above would be a thing of the past, and life for a decent, honest, painstaking employer, such as I am sure you are, would be worth living.

* * *

Concrete for School Buildings

A SITUATION of more than ordinary interest has developed in Philadelphia, where the Property Committee of the Board of Education has under consideration the erection of new school buildings. A rather surprising report was circulated, giving the impression that after due consideration the committee was opposed to the use of cement and concrete in the construction of these buildings, and that in assuming this attitude it had the support and approval of well-known architects. This position seemed so radical that inquiry was made as to the true situation by engineers and architects who are making a specialty of concrete construction, and, as might have been expected, the report was found to be somewhat misleading. It transpires that opposition to concrete, especially on the part of certain members of the committee and various architects, is not so uncompromising as the report would make it appear. It has also been discovered that the committee is not at all prejudiced in the matter; but, on the contrary, is inclined to liberal views, with the hope of solving the building problem to the best advantage of all concerned.

The subject is one of moment, and brings up exceedingly interesting questions. It may be of interest to note that at this moment the most prominent journal in the United States devoted to insurance engineering is preparing reports from more than three hundred colleges and universities respecting fire dangers due to bad construction, which brings into prominence the value of concrete in buildings of this character. From the fireproof standpoint alone, concrete should not be discarded without the most extended and careful inquiry as to its value in this respect. It is hardly possible that any capable architect or engineer would in this day take the ground that concrete is not safe from a structural point of view. On that point there is abundant evidence to be found in Philadelphia, where many concrete manufacturing plants, some of them many stories high, have been constructed in recent years. In many, the wide-span girders and beams carry concrete floors especially designed to withstand the pressure and vibration of heavy machinery. Concrete will not only mean structural strength, but fireproof walls, stairways and roofs, if the Board of Education cares for that sort of thing. Concerning the artistic side of the problem, there may be cited handsome private residences and costly hotels built of this material, some of the most striking and notable among them having been designed by Philadelphia architects. In one instance, reports credit the committee with the statement that concrete construction requires great care and expert knowledge. Every properly constructed building demands this. From all that has been presented, we fail to see how concrete has been discredited. It is likely that the committee has heard but one side of the story, and before deciding the matter finally, its members would find it exceedingly interesting and instructive to invite before them some of the engineers and architects of known ability and standing who are achieving an enviable reputation in concrete construction. Let them hear both sides of the story.—Cement Age.

Cement Sidewalk Specifications

THE following specifications formed a part of the paper read by Albert Moyer, New York City, at the convention of the National Association of Cement Users in Chicago:

Drainage Foundation.—Excavate to a sufficient depth so as to get below the frost line, ram and tamp the ground thoroughly and evenly, fill in with clean cinders, broken stone or brickbats to within — in. of top of the established grade of the pavement (a sufficient number of inches to provide for the thickness of slab necessary to give sufficient strength for the character of the work it is to perform); tamp this drainage foundation well and evenly, thoroughly wet the cinders, stone or broken brick, place in position wooden forms in a manner necessary to accurately outline the top and external edges of the walk, the top of the form being located so as to coincide with the established grade of the walk. As an additional precaution, and where necessary to accomplish the purposes of drainage, side drains should be placed every ten or twelve feet, having a fall of not less than one-quarter inch to the foot, leading to some point forming an outlet for water which may accumulate. This outlet should be below the frost line and may be accomplished by a hole filled with cinders, stone or brickbats.

Concrete Base.—For a concrete base spread — in., number necessary to provide for the thickness of slab which will come to within one inch of the top of the established grade; this concrete to be composed of one part Portland cement and two and a half parts sand or quarry screenings, all passing one-quarter-inch mesh, and five parts broken stone or gravel, all passing one-inch mesh.

These specifications may be regulated if proportions can be obtained which will allow of a larger proportion of broken stone, at the same time giving maximum density. Tamp the concrete to an even thickness, cut same into uniform squares of not over six feet square, using a steel cleaver of not less than one-eighth inch and not over one-quarter inch in diameter. Fill the joints thus formed with dry sand, so that there is no possibility of the square blocks adhering together. Mark on the wooden forms the exact locations of these cuts. After each batch of concrete is laid as required, it shall be immediately covered with a top coat, or wearing surface, no dirt or dust having been allowed to accumulate on the base and the surface of the base to be wet or moist. Any portion of the foundation which has been left long enough to have the appearance of setting or hardening shall be taken up and relaid before the top coat is put on.

Place a 2x3 inch strip parallel with sides of walk, in such position as will form square blocks, of equal dimensions, not over six feet wide; brace same with stakes, but do not nail to frame; then cut a strip 2x3 inches, the length of which is to be the width of the blocks. Place this strip so as to form a square block. On inside of strips place thick tar or felt paper, one-quarter inch thick and three inches wide; fill in the space thus formed with concrete composed of one part Portland cement, two and one-half parts sand and five parts crushed stone or gravel, mixed thoroughly. Tamp concrete thoroughly to an even thickness of three inches, then remove strip; the tar paper will adhere to the concrete. Move the strip to the next position, place the thick tar or felt paper as before, and proceed the same with each block, laying alternately. Put on top coat before the first block made starts to set or harden, and in regular order as blocks were made.

Top Surface.—For wearing surface, mix one part Portland cement with two parts crushed granite or other hard stone, all of which will pass through a one-quarter-inch mesh screen, or good coarse sand; mix by turning with shovels, raking with a garden rake as each shovelful is turned, turn twice dry and twice

wet; add sufficient water to make a plastic consistency, so that when floated or troweled very little water rises to the surface. Spread this mortar over concrete base to a thickness of one inch. Work to a flat surface with a straight edge, smooth down with float and trowel after surface water has been absorbed. Be careful to get an even surface, bringing no neat cement to the surface and avoiding float and trowel marks.

Cut top surface directly over cuts made in base; cut entirely through top and base all around each block. Finish joint thus made with a jointer and round or bevel all edges.

Monolithic Slab.—As an alternative, and instead of using a top coat, make one slab of selected aggregates for base and wearing surface, filling in between frames concrete flush with established grade. Concrete to be of selected aggregates, all of which will pass through a three-quarter-inch mesh sieve; hard, tough stones or pebbles graded in size, proportioned to be one part cement, two and one-half parts crushed hard stone screenings or coarse sand, all passing one-quarter-inch mesh, and five parts crushed hard stone or pebbles, all passing through a three-quarter-inch mesh. Tamped to an even surface, prove surface with straight edge, smooth down with float or trowel, and in addition a natural finish can be obtained by scrubbing with a wire brush while concrete is "green," but after final set.

Expansion.—Do not allow any block to bear directly against any solid body, such as stone curb, building, post, manhole rim, etc. Leave the same space (about one-quarter inch) between pavement and such fixtures as is between the blocks themselves. This applies to the base and top as designed to avoid cracks and chipping due to expansion and contraction from temperature changes. This space can be conveniently provided for by the use of thick tar paper or felt, waterproofed with any of the reliable waterproof paints.

Protection and Seasoning.—Immediately as finished cover pavement so as to protect against rays of sun and drying, raising covering a few inches so as not to come in contact with the surfaces after pavement has reached hard set, sprinkle frequently, two or three times a day, with a garden hose or sprinkler for a week or more.

* * *

The Need for Clean Men

If one were to go to the President of the United States and ask him to name the country's greatest need, he would reply in his quick, conclusive way, "Clean men." He knows smart men there are by thousands; rich men abound more than in any other age of the world; able men are found in every State and township, but even from a population of eighty millions the chief executive has difficulty in finding the man of exceptional character for a post which requires a square and flawless morality. It is to his credit that he misses no opportunity to preach clean manhood. But neither Presidents nor preachers nor teachers can do the work of fathers except in their own families. We do not mean to underestimate the marvellous influence of the mother. In most lands men who reach success give their mothers the credit. "All that I am I owe to my mother," said Lincoln. "It was you who taught me to write so. You really did, dear mother," said the crabbed Carlyle. We get our moral qualities from our mothers, our mental from our fathers, say the physiologists, and as we look back we find this maternal affection the loveliest thing on earth. But isn't there a conviction down deep in our souls that we should have done much better if our fathers had taken time and trouble to share our confidences in the years that counted most?—The Delineator.



A Collection of Tasty Lighting Fixtures by the Taylor & Sinclair Company

Interior Decoration



Symbolism in Decoration

DECORATIVE art to be lasting, must convey a meaning. The uneducated mind perceives little decoration beyond the pictorial, but the man who knows can obtain much satisfaction from his reading of a properly executed decorative work.

One, in viewing a structure, may see nothing but a decorative result that is rather pleasing. The student on the other hand, can fix, in the use of the symbolism employed, the object of the structure or the use to which it is applied.

The use of the Circle, the Ellipse, and their subdivisions in tracery all indicate the Gothic or religious character.

The Laurel and Olive owe their introduction to their symbolic influence. They were conspicuous in the tree worship of the ancient Greeks. The laurel was sacred to Apollo; it was the symbol of atonement; conquering heroes were crowned with it. The olive was sacred to Athena; olive branches were the prizes of victory of the Olympian games.

The Lotus and the Papyrus played an important part in the social life of the Egyptians, Hindoos and Assyrians. Even the paper of the Ancients was made of papyrus. The lotus was a symbol of the recurring fertilization of the land of the Nile, and in a higher sense it indicated immortality. The palm was a symbol of victory.

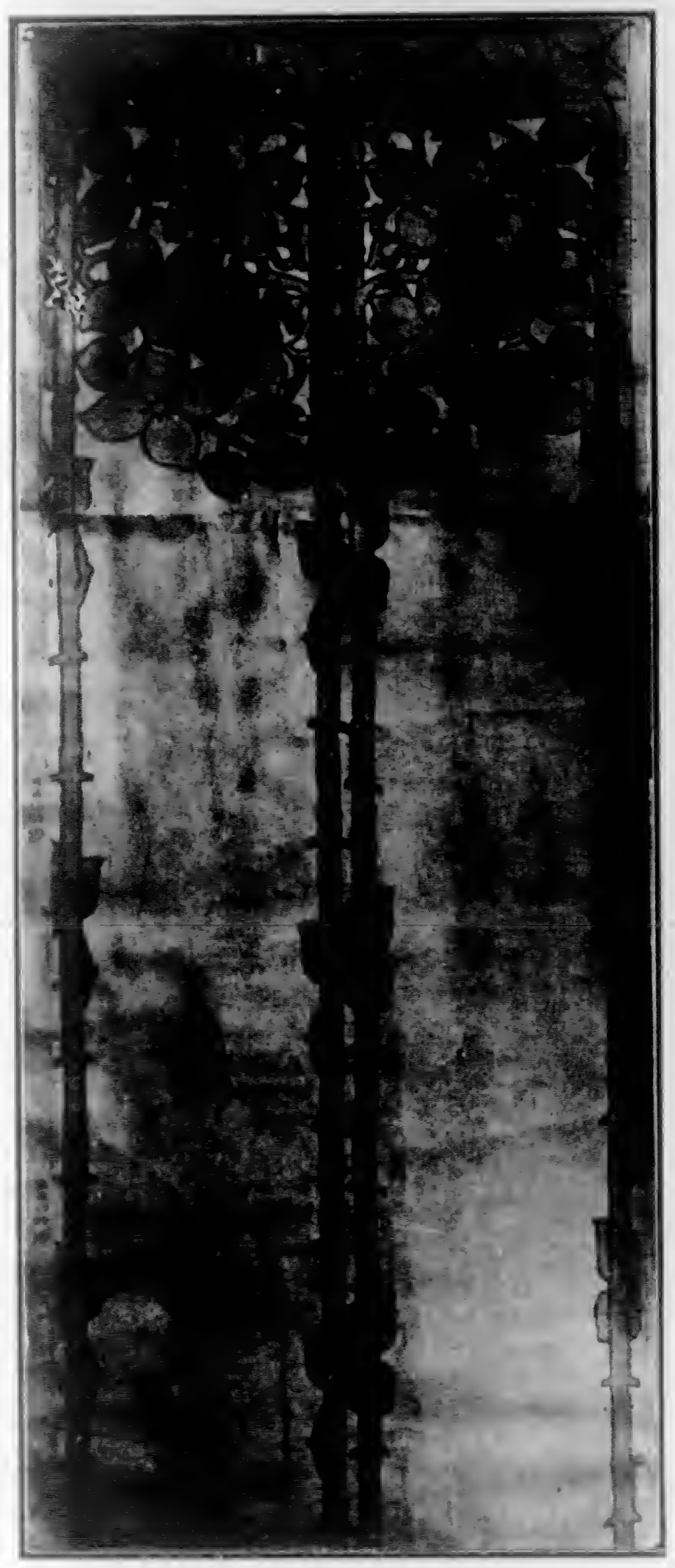
It is easy to understand how the vessels of religious rites passed into the decoration of religious edifices. In the antique style the altars, tripods, candelabra, sacrificial axes and sprinklers were introduced naturally.

In the Gothic period the symbol of the cross, the marks of priestly dignity, the suggestion of the passion, became part of the decoration.

It was the custom of the Greeks to hang upon the trunks of trees

the weapons which the flying enemy had left behind. These tokens of victory were called trophies.

The Romans erected artificial trophies of stone or bronze, and since that period trophies have been used for innumerable purposes; the grouping of warlike weapons and the grouping of tools and instruments, to symbolize some special idea.



One of the New Panels

We have symbols of art, music, painting, sculpture, architecture; symbols of science, mathematics, astronomy, chemistry; symbols of commerce or technical science and trade symbols.

Singing, for example, is symbolized by a lyre, with or without sheets of music; music by violins, flutes, horns, Pan's pipes, etc.; dancing by the tambourine, castanets; acting by mask, painting by brush and palette; sculpture by the hammer, chisel and works of sculpture, busts, torsi; architecture by square, straight edge and compasses, usually in combination with capitals; the railroad and steam are symbolized by a winged wheel, the telegraph by coils of wire which radiate lightning; trade is represented by casks and bales of goods on which the caduceus (a staff around which winged serpents are twining—the attribute of Mercury) is resting; agriculture has the plough, the sickle, the scythe, etc. Where the trophy or symbol is used properly one may trace thereby the period of design with little difficulty.

Among the Greeks and Romans the lion was regarded as the guardian of springs and gates and temples; but in Christian art it is often the emblem of the evil principle (the enemy who goeth about as a roaring lion seeking whom he may devour).

The crusades of the twelfth century introduced the lion into heraldry.

The griffin is the union of the lion's body with the head and wings of the eagle.

The griffin is a symbol of wisdom and watchfulness.

The eagle has been used in decorative art since the earliest times. Next to the lion it is the most used heraldic creature, and adopted by the United States, Germany, Austria, Russia and France.

The dolphin of ancient times enjoyed a kind of veneration which protected him from attack.

The use of the mask dates back to the harvest games of the earliest Greek period. From the games it was transferred to the ancient theater, in which the actors all appeared masked. From theatrical the mask passed to artistic uses, and was utilized in Pompeiian decorations. It was naturally adopted in the Renaissance period.

Ribbons have no significance. They are used as labels to bear some motto or as purely decorative features. In the antique form they often terminated in an acornlike knob; in the Middle Ages they were used curled and quaint; in the Renaissance they developed in various free styles, often divided at the ends like a pennant; in the Louis XVI style they were used for their design features.

The use of the circle and its subdivisions in design all indicate the Gothic character, but there are exceptions to the rule, besides the Persian and Indian types, which during the period of Saracenic conquests show the influence of Gothic art. There are examples of Sicilian design, that are identical with the Roman design. The reason for this is that the Sicilian took it from the Byzantine, and the Byzantine took it direct from the Roman.

The Chinese and Japanese also used the circle in their respective characteristics. Again the lotus motifs introduced mark it as Egyptian.

The Gothic circle was utilized usually in circumscribed squares, but in the sixteenth century the design was treated in a more liberal spirit. The mediaeval circle treatment is also clearly defined, while at a later date the circle is relegated to a structural background or framework upon which early French Renaissance forms of classic design are built.—Wall Paper News and Interior Decorator.

* * *

The Decorative Periods

Arranged by C. WALTER TOZER

Byzantine—328 A. D.—1451 A. D.—Early, 328 A. D.—550 A. D.: Constantine I, 272—337; Emperor, 330 A. D.; Best Period, 550 A. D.—1000 A. D.; Late or Italian Period, 1000 A. D.—1451 A. D.

Constantine I, surnamed the Great, became Emperor of Rome 306 A. D., and was the first Roman Emperor to adopt Christianity. With his conversion Christian art emerged from the catacombs, and for 700 years all art and architecture was lavished on churches and ecclesiastical trappings. In 330 A. D. he removed the capital of the Roman Empire from Rome to Byzantium; hence the name Byzantine is given to all Christian art previous to 1000 A. D. Later the name of the city was changed to Constantinople, and in 1453 it became a Turkish city.

Greece became a Roman province, but the taste of the Greeks spread over the Roman Empire. When the Roman Empire was divided into the Eastern and Western Empires, Greece became attached to the Eastern Division, frequently called the Byzantine Empire and later the Greek Empire. Mohammed II, in the fifteenth century, put an end to this Greek Empire and it became a Turkish province. The Greeks were under subjection to the Turks for four hundred years and finally revolted. During this subjection they realized that they were a distinct people and exercised their art, which was naturally absorbed by the Turks. It is thus easily seen where the Byzantine form of

decoration became influenced by the Greek and Roman, and we can see also how many of the old Greek forms have found their way into Turkish work. The Turks took much of the atmosphere of their art, especially that gorgeous, resplendent form which was practiced in Byzantium.

The Byzantine or Oriental Roman held sway from the fourth to the sixth century, and was permeated by the early Greek and Roman periods and influenced also by the East. It was a form resplendent in gold and brilliant color; the groundwork of many of the fabrics and many of the paintings was all gold, consequently the other colors, reds, blues, and greens required very deep and full tones. Even in enamel work gold was liberally used. It was an age of luxury. In the fifteenth century, Byzantine art flourished, and the late Italian form found Byzantine fabrics, woven and embroidered, the most valued of all textile works the world over. In the range of art treatment during this period, whether of a Greek or Roman character, or of the more Oriental type, the gold and deep primitive colors formed a distinguishing color characteristic.

The Byzantine style engrafted Christian sentiment upon reminiscence of the Greek and Roman, and exercised a powerful influence on all arts of the Middle Ages. When the Mohammedans overran Byzantium and established their capital in what is now Constantinople, they adopted Byzantine art and carried it through all Southern Europe and Asia.

The great, significant fact of Mediaeval art is that it was Christian. There is a close connection between religion and art in all the ancient historic styles. Under Constantine and after Christianity became the State religion of the Roman Empire, it began also to dominate art and architecture. It was Oriental in feeling in the Eastern part of the Empire. In the West, however, the Germanic and Celtic influences tended to differentiate the Christian Roman from the Byzantine forms. This was due to the fact that the West was overrun and possessed by Germanic tribes.

Difference in language, however, did most to alienate West from East —Greek being the language in the East, while Latin was the language of the West. A third great language, Arabic, and a second great religion, Mohammedanism, came to the front rapidly. The new religion spread with wonderful rapidity, and in a few years Arabia, Persia, Syria, Sicily, Egypt and the rest of Northern Africa and Spain came under its influence.

The innumerable evolution stages, and the periods affected by commercial absorption or by conquest or by the spread of the Christian religion, are confusing. The Saracenic conquests carried the arts of one country to another, and combined and assimilated the Mohammedan and Byzantine characteristics. The Crusaders also scattered the Byzantine and Far Eastern art through Europe.

Early Christian is an expression frequently synonymous with Byzantine, for Byzantine was an art full of Christian symbolism. Saracenic is an expression interchangeable frequently with Moorish, Arabic, Arabian and Alhambraic.

SARACENIC.

The Saracens were followers of Mohammed, who preached the unity of God. When he fled from his native land, Arabia, he was accompanied by trusted followers, and they were called Saracens. Mohammed gained many victories over his enemies, and at his death left an ardent band who spread the faith by means of the sword.

(To be Continued)

Among the Architects

American Institute of Architects

(ORGANIZED 1857)

OFFICERS FOR 1907:

PRESIDENT.....................*FRANK M. DAY
Philadelphia, Pa.
FIRST VICE-PRESIDENT........*WILLIAM B. MUNDIE
Chicago, Ill.
SECOND VICE-PRESIDENT......R. CLIPSTON STURGIS
New York.
SECRETARY AND TREASURER..*GLENN BROWN
Washington, D. C.
AUDITOR FOR TWO YEARS.....ROBERT STEAD
Washington, D. C.

Board of Directors for 1907

For Three Years—Walter Cook, New York; Edgar V. Seeler, Philadelphia; J. L. Mauran, St. Louis, Mo.

For Two Years—Alfred Stone, Providence, R. I.; Irving K. Pond, Chicago, Ill.; Ralph Adams Cram, Boston, Mass.

For One Year—W. A. Boring, New York; J. M. Donaldson, Detroit; Merritt J. Reid, San Francisco.

*Executive Committee.

Next Convention at Chicago, Illinois

San Francisco Chapter of American Institute of Architects

PRESIDENT..............................ALBERT PISSIS
VICE-PRESIDENT...................WILLIAM MOOSER
SECRETARY................SYLVAIN SCHNAITTACHER
TRUSTEES........................ HENRY A. SCHULZE
WILLIAM CURLETT

Southern California Chapter.

Officers for 1906-1907.

PRESIDENT...............................MYRON HUNT
VICE-PRESIDENT.........................C. H. BROWN
SECRETARY.....................FERNAND PARMENTIER
TREASURER...................AUGUST WACKERBARTH

Board of Directors

A. F. ROSENHEIM OCTAVIUS MORGAN
J. LEE-BURTON

Architects Exonerated

The recent verdict of a jury in Judge Conrey's court, Los Angeles, in a suit of Mrs. Phillips against the Bixby Hotel Company of Long Beach, was against that company alone and not against the architects. The court had early in the hearing rendered judgment for the architects, John C. Austin and Frederick G. Brown, the lengthy examination following pertained solely to the hotel company. The court held that there was no faulty work on the part of the architects. The jury awarded Mrs. Phillips the sum of $10,000. The case will be appealed. The verdict also excluded Contractor F. L. Spaulding.

Oakland Has New Building Law

The new building ordinance of the city of Oakland is now in effect and some radical changes have been inaugurated in methods of construction. The ordinance was drafted by a commission composed of J. D. Galloway, engineer; Walter J. Mathews, architect; W. T. Veitch, builder and contractor; Councilman Baccus and ex-Councilman Thurston, in consultation with the members of the Board of Public Works, and is declared by building experts and architects to contain more modern ideas on construction than that devised by any city on the Coast. In its principal provisions it follows closely the San Francisco ordinance, but contains more details regarding electrical wiring and partition work.

"The Oakland ordinance is, we think, as good and fair a law as has been devised for the protection of the builders and the property owners," said Walter J. Fawcett, secretary of the Oakland Board of Public Works. "It embodies the very latest ideas of construction of the large Eastern cities and is a big improvement in many respects over the San Francisco building regulations. With us hereafter nothing will be left to the discretion of the builder or the architect. Every little detail is provided for and every class of building is regulated in its entire construction, from foundation to roof, from the simple cottage to the modern skyscraper or Class A building.

"A special feature of the law is the attention given to theater construction. The enforcement of the ordinance will entail some changes in present theater buildings and compel managers to provide every care for the safety of patrons. We do not require absolutely fireproof construction, but theaters must be of fire-resisting material, with ample exits, which is the provision of ordinances lately enacted in the big Eastern cities. The old Oakland building ordinance had many loopholes; the new one has plugged these up and will, so the board expects, result in a greatly improved class of construction on the Oakland side of the bay."

Los Angeles Engineers and Architects

Some sixty members of the Engineers and Architects Association of Los Angeles took part in their regular monthly banquet at Levy's on July 23d, after which they were entertained with a description of the scenes and progress of the work of construction of the Panama Canal by United States Senator Frank P. Flint, the guest of honor.

He was introduced by the president of the association, J. B. Lippincott, and gave a very interesting account of what he saw during his trip through the canal zone. He told of the piles of junk, iron and steel left there by the French workmen. He paid a high compliment to the United States Sanitary Corps for their work in cleansing the city of Panama and putting the place in a fit condition.

In the construction of the canal there are sixty-five steam shovels, two thousand locomotives and three thousand freight cars employed. He was of the opinion that the great Culebra cut will be completed and almost forgotten before the Gaton dam and locks are ready for occupancy. He estimated that in nine years the people of the United States would be making trips between the two oceans.

To Repair Postoffice

At the last session of Congress an appropriation approximating half a million dollars was made for the purpose of repairing the damage to the San Francisco Postoffice building made by the earthquake and the dynamiting of buildings in the vicinity. Nothing was accomplished, however, in the way of beginning the work until recently when the ten thousand dollars' worth of window glass shattered by the explosion was replaced.

Superintendent Roberts explained that the Treasury Department was delaying the work until the light earth tremors, which occurred from time to time up to a few months ago, had subsided. The earth having settled to its normal calm the Treasury Department has had plans made for the repairs, and the work will be begun as soon as possible.

Much of the granite on the northeast and west sides of the building was cracked by dynamite and this together with cracked marble slabs in the interior will be replaced with new materials.

Mr. Roberts is having difficulty selecting a site for the new Postoffice building at San Diego. An appropriation of $30,000 was made by Congress, but thus far every site that has been selected has cost so much that if purchased there would be little left of the appropriation for a building.

Thomas F. Osborn, C. E.

Thomas F. Osborn, civil engineer and reinforced concrete expert, died July 20th at the Hearne Hospital, San Diego, after a brief illness. For several years previous to his death, he had been connected with Carl Leonardt as engineer. He was an authority on reinforced concrete and steel construction and at the time of his death was employed by Architect Harrison Albright in superintending the construction of the Grant Hotel and Spreckels building at San Diego.

The Huntington, Laughlin, Bumiller and Citizens' National Bank buildings were among the structures erected by him in Los Angeles.

Before taking up reinforced concrete work Mr. Osborn devoted his attention to steel construction and he was considered final authority in all matters pertaining to structural steel. As designer or consulting engineer, he had a hand in the erection of many of the great steel frame buildings of the Coast.

San Francisco's Wonderful Building Record

Six thousand buildings have been completed in San Francisco since the fire, and 3000 are in course of erection. In the burned area alone, and this is not the seat of all the building operations, seventy-nine reinforced concrete buildings have been finished or started since April, 1906. In addition to these there are nearly an equal number of steel frame buildings having concrete parts. Of the concrete buildings, there are four one-story, eleven two-story, twenty-one three-story, eight four-story, seven five-story, nine six-story, eight seven-story, seven eight-story and one ten-story.

The value of building permits issued since the fire amounts to the stupendous total of $78,250,620, and as the permits are usually taken out for a sum less than the value of the building, the total value of the buildings when completed will probably be between $90,000,000 and $100,000,000. In July alone the total value of the building permits amounted to $4,752,778. During the same month the permits issued in Los Angeles amounted to $1,245,174; in Oakland, $373,085; and in San Diego, $149,450.

The value of the building contracts let since the fire amount to $68,103,959. Of this sum $29,514,240 is represented by frame structures, $33,739,353 by brick or stone structures, and $4,949,366 by alterations.

Nothing, however, shows the vast amount of building going on as the receipts of building material. These figures are only available for the fiscal year ending June 30, 1907, but their aggregate is almost inconceivable. During that period there arrived here 768,802,866 feet of lumber, 27,593,108 bricks, 517,360 tons of gravel and crushed rock, 276,115,200 shingles, 180,781,350 laths, 4,361,775 shakes, 80,317 tons of cement and 3840 tons of window glass. These figures do not include the shipments by all-rail routes, nor the millions of old brick that were used in reconstructing the city, nor the thousands of tons of gravel and crushed rock that have been taken from the city's quarries and pits. In fact, most of these materials, as well as most of the brick that have been used, do not show in these figures. The lumber alone is enough to cover the burned area with flats, and the cement would suffice for thirty buildings the size of the new Pacific building, which is the largest of its kind in the world.

Building operations are likely to be greater in the future even than in the past. Materials have decreased in price and the adjustment of the question of wages is being rapidly worked out to the satisfaction of both parties interested. There is no question but that building here in the past has been attended with great difficulties, but they are steadily being effaced. During the first few months after the fire, the freight congestion was such that it was nearly impossible to get materials at any price, and this fact deterred many from assuming contracts having a time limit.

Cement

One of the most important factors in the rebuilding of San Francisco under modern construction conditions is cement. It has entered largely into the high class buildings that have gone up in the burned district, the amount used being something phenomenal. According to figures secured by the California Promotion Committee, there have been brought into San Francisco since the fire about 2,500,000 barrels of cement. Of this 1,300,000 barrels came from foreign countries, 200,000 barrels from the United States outside of the State, and 1,000,000 barrels from California.

A barrel of cement weighs 400 pounds, consequently, there were 1,000,000,000 pounds, or 500,000 tons of cement in these two and a half million barrels. To haul this vast amount would require 25,000 cars, or about 1200 trains. This one item will give some idea of the vast undertaking embodied in the rebuilding of San Francisco.

Mechanics Bank Building

Plans for the completion of the Mechanics' bank building have been finished by Architect L. B. Dutton, and the contractors, Lindgren-Hicks Company, are now taking bids in all lines of trade for this structure, which will be a steel frame building at the corner of Mason, Turk and Market streets. The erection of the frame was completed four months from date of letting the steel contract.

Personal Mention

Julius Krafft & Sons have moved to the Grant building, San Francisco.

William Curlett and family have been enjoying a month's absence from the city.

Maxwell G. Bugbee is in Europe. He is expected to return early in September.

Loring P. Rixford has been appointed a member of the San Francisco Board of Supervisors. Mayor Taylor's selection of the talented young architect meets with the approval of the profession.

Architects for Schools

The San Francisco Board of Works has refused to adopt a resolution to legalize the appointment of twenty architects selected by the last Board of Supervisors to prepare plans for new school buildings under the bond issue. Commissioner Eagan said that the Supervisors had usurped the powers of the Works Board in making the appointments and that he would oppose an indorsement of an act which was in direct violation of the charter.

Architects Offer Services

Supervisor Loring P. Rixford, chairman of the Building Committee, has received offers from several architects and builders to figure on the repairs necessary to the City Hall. Rixford said the names of the two selected soon will be made public, and in the meantime he is endeavoring to obtain the data on which the four architects appointed by the last board filed a report and received $6500 for their services.

Architect's Nephew Drowned

Clarence Dell, a student at the St. Matthew Military Academy, Burlingame, and a nephew of John M. Carrere, architect, of New York, was drowned while bathing in the Burlingame beach August 15th. In attempting to rescue the young man John B. Brooke, instructor in English, and George W. Smith, instructor in mathematics, were also drowned.

THE
Architect and Engineer
OF CALIFORNIA

Published Monthly in the interests of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by the Architect and Engineer Company.

SAN FRANCISCO AND LOS ANGELES

OFFICES
621 Monadnock Building - San Francisco
Telephone Temporary 1928
142 Broadway, Los Angeles Phone, Home 5747
423 Lumber Exchange Building, Portland, Or.

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

Vol. X. AUGUST, 1907 No. 4

THEY THAT LIVE IN GLASS HOUSES

Plans are being made, according to press reports, for a house to be built entirely of glass. This house, it is stated, is to be erected on Long Island, at a cost of $25,000, for a Wall street broker, who will seek sanitary perfection and all the health-giving qualities from sunlight shining through the roofs and walls as well as the windows of his residence. The house will be the size of a fifteen-room dwelling, but instead of having interior walls with hallways and doors, the two floors are to be divided off by means of Japanese screens of bamboo and paper as suits the occupant's fancy. Hollow glass blocks 12 inches long and 10 inches thick will be used in the construction of the house, and cream colored blocks will probably be chosen for the walls. An elaborate system of screens is to be devised to regulate the amount of sunlight. Electricity will be used for lighting and great care will be taken in installing the wiring and plumbing so that at night the house will not look like an X-ray photograph. An exchange comments that as the glass will be tinted and therefore will not be transparent the owner of the house will not be obliged to follow the old maxim that "People who live in glass houses should pull down the shades."

STRIKERS RETURN TO WORK. PROSPERITY ONCE MORE

Aside from the loss to each workman of several months' wages and a general hindrance to reconstruction, the various strikes among the San Francisco building trades have utterly failed in their purpose. The machinists will have to wait three years before they get what they demanded, while the stone cutters have returned to work with not so much as a compromise. The stonemen were out on strike nearly three months. Seeing the bricklayers advance their wages arbitrarily from one high point to another, the sandstone workmen thought to follow their example. Not content with five dollars per day they tried to make it five and a half, and six. The increase was denied and after three months' fight, the strikers have given up and those whose places had not already been filled, are back at the old wage schedule; glad, indeed, to be earning an honest livelihood once more.

The lesson is a hard one, and in its effects it involves not only those directly at fault, but others connected with them. With these two strikes settled, a final adjustment of a new wage scale as purposed by the Builders' Exchange, and the considerable drop in building material, there is no reason why San Francisco should not fairly boom.

Seth Babson, Architect

SETH BABSON, Architect, died July 10, as the result of an operation. He was 79 years old. The following tribute to Mr. Babson's character and professional life was prepared by Messrs. Henry A. Schulze, William Curlett and Sylvain Schnaittacher, a special committee from San Francisco Chapter, American Institute of Architects, of which the deceased was a member:

"Your committee herewith places before you a brief tribute to the memory of our old associate, Seth Babson, with the suggestion that a copy of the same be forwarded to the survivors of his immediate family, to the American Institute of Architects at Washington, D. C., to the State Board of Architecture (of both which bodies he was a member), to the professional magazines and journals, and that a copy be spread upon the minutes of our Chapter.

"Seth Babson, well and honorably known the length and breadth of California as one of the pioneers in the architectural profession in this State, passed to the silent majority on July 10, 1907, having reached almost his 79th year, maintaining his vigorous active interest in his chosen profession to within but a few days of his death. For over fifty years he was identified with the architectural and building activities of this State and throughout that long career won and maintained the confidence and respect of his many clients. He was elevated to signal distinction by his professional brethren on many occasions, the most noteworthy of which was that of president of the San Fran-Francisco Chapter of the American Institute of Architects which office he filled for many years. In 1901 his chosen State honored him through his appointment by Governor Gage as a member of the State Board of Architecture, which position he held at the time of his demise.

"He was born in Maine, which State he left to settle in Massachusetts and where he remained to the year 1850 at which time he transferred his activities to California locating at Sacramento when he at once entered into his professional life and where he continued for the succeeding twenty years being intimately associated during that period with the pioneer projectors of the Central Pacific railroad then in course of construction, and the residences built at Sacramento then the finest in the State by these individuals bear witness of his professional ability and activity, moving later to Alameda where he lived for the past twenty-eight years continuously practising his profession up to the time of his death.

"He loved his home and his profession and devoted his life to the service of both. His long professional career matured and mellowed his judgment which was used to the advantage of his younger brethern on all occasions and was therefore often appealed to; being blessed with a share of the leisure that comes of successful old age there was no service that he was not ready and willing to assume to further the elevation and dignity of the cause of architecture and many of the successes of the body at large are directly attributable to his unsparing efforts.

"His death came as the result of an operation made necessary from an injury received some months before his death. Although not incapacitated entirely after the injury, his age and lack of recuperative power, when the operation was resorted to for relief, acted against his recovery and he passed away suddenly from heart failure with little suffering and wholly unconscious of the fact that his end was near.

"He is survived by his widow and three sons, to whom this tribute by his brethren is offered as a recognition of the esteem with which is held the memory of his modest character, retiring disposition and thoughtful interest in all he held most dear.

"HENRY A. SCHULZE,
"WM. CURLETT,
"SYLVAIN SCHNAITTACHER,
"Committee."

The Publisher's Corner

Demand for Tile

The Western Art Tile Works are furnishing material for a $50,000 house on West Adams street, near Arlington, Los Angeles, Hudson & Munsell, architects. The house will have terra cotta exterior, partitions and ceilings. The cellar walls will be of white porcelain finish hollow blocks.

The Highland Park Masonic Temple is constructed of hollow terra cotta building blocks, tooled and faced in the natural color (a pinkish buff) manufactured by the Western Art Tile Company. Plans have been completed by Kelly & Newbery, architects, for a two-story hollow block house for Mr. Douglass. A. Dudley, architect, is designing a two-story apartment house, to be entirely of hollow tile construction. Architect Puttcamp is at work on a $20,000 tile sanitarium to be built in Eagle Rock Valley.

This company is furnishing twenty-three thousand feet of glazed facing tile for the Pacific building at Market and Fourth streets, San Francisco, Charles F. Whittlesey, architect.

Mexican Onyx in Demand

G. A. Bushert is the new representative of the New Pedrara Mexican Onyx Company in San Francisco. His address for the present will be 63 Fremont street. The company has contracted to furnish onyx fixtures for the First National Bank, Oakland; First National Bank, Long Beach; and the San Diego Savings Bank; also the fine entrances in the Elks hall and Scripps building, San Diego.

THE PRINCIPLES OF WOOD FINISHING

The Necessity of Properly Preparing the Foundation for the Finish

The correct principle of finishing all kinds of wood is to produce a perfectly smooth and elastic surface with as little varnish or finish as possible.

To accomplish this the surface of the wood must be first made even by filling the pores or grain with a hard, firmly fixed and unchangeable substance, which must be transparent and not shrink or sweat.

There is nothing more unattractive than the interior woodwork of a building which has been improperly treated and finished. Instead of its full life and beauty being brought out and preserved, it has been obscured and made lifeless, and so finished that in time it darkens and becomes more and more unsightly, or else the finish sinks in and is destroyed.

There is but one way of obtaining a permanent finish on wood, and that is to properly prepare the foundation. All woods have innumerable pores, which it is necessary to fill before finishing.

An experience of many years has demonstrated that there is but one base that can be successfully used to fill the pores of wood. This material is silex, especially prepared from rock crystal quartz.

When the crystalline pieces of quartz, infinitesimally small, are combined with especially prepared oils and japans, and the pores of wood are filled with this material, a permanent foundation is made for the finish.

There is but one filler on the market which is made from the above materials, and which is recognized by all leading architects as an article that produces a permanent finish, and which, when used on wood develops its full life and beauty. This is the famous Wheeler Patent Wood Filler, recognized the world over for superiority and economy.

It is not to be denied that the pores of wood can be partially filled with varnish or other wood fillers and substances, but it is an admitted fact that it is impossible to properly fill the pores of the wood, and obtain a permanent finish with any other article than the Wheeler Wood Filler.

It is for these reasons that this article is used by the leading furniture manufacturers, car builders and piano manufacturers in Europe as well as America.

It is also invariably specified by all well informed architects who desire to obtain on their work the best finish.

About four years ago, one of New York's leading hotels was completed. The contract for the finishing of the woodwork was given to a contractor who used inferior materials, and at the time the work was finished it looked sufficiently well to be accepted by the architect. Today, however, the entire finish on the woodwork in the building has sunken and is a disgrace, and it will have to be refinished at considerable cost.

This would not have happened had the proper foundation been made.

When it costs no more to use the best wood filler, properly preparing the foundation, there is no excuse for such cases as above mentioned, which is an example of something that is continually occurring wherever architects are not explicit in their finishing specifications, or where contractors attempt the substitution of inferior materials, falsely believing that these materials are cheaper.

Among the prominent buildings recently erected where Wheeler Filler has been used with entire satisfaction, might be mentioned the following:

New York City: New York Stock Exchange, New Plaza Hotel, St. Regis Hotel, New Hoffman Hotel, Hotel Astor, Lombard Apartment Hotel, New Custom House, Broad Exchange building, Bismark Apartment Hotel, Atlantic building, Rossley Apartments, Myers building, Korn building, Broztell Hotel, St. Luke's Hospital, etc, etc.; Annapolis, Md.: Naval Academy buildings; Harrisburg, Pa.: State Capitol, Railroad Station; Philadelphia: The Belgravia Apartments; Chicago: Post office, LaSalle Station, Monadnock building, Marquette building, Railway Exchange, New Tribune building, Studebaker building, etc., etc.

The manufacturers of Wheeler Patent Wood Filler, The Bridgeport Wood Finishing Company, of New Milford, Conn., New York, Chicago, Philadelphia and Boston, have recently issued a booklet—Modern Wood Finishing—which goes into this whole subject quite fully, and which it will pay all architects to carefully read.

It can be obtained by writing the company, or from The Whittier Coburn Company of Los Angeles and San Francisco, who carry in stock a very complete line of these standard wood finishing products.

Increased Use of Pneumatic Tubes

The A. C. Rulofson Company, of San Francisco, Pacific Coast agents for the Single Tube Transmission Company of Boston, report increased interest in their line. They are about completing a very elaborate "Davistor" system in the Fairmont Hotel. They have recently installed this system in the offices of the San Francisco Call, San Francisco Chronicle, and the Wells-Fargo Nevada National Bank. After carefully investigating the different pneumatic systems, the Claremont Hotel of Berkeley, Langley & Michaels' Wholesale Drug House, and the Crocker National Bank, have selected the "Davistor" as the simplest and most desirable for commercial purposes, and have placed their contracts with the above name company for complete systems. It is only within late years that pneumatic devices have been adopted for use in mercantile houses, banking rooms, factories, etc., and the cost worked down so that they can be economically installed. Heretofore the ponderous machinery and complicated mechanism have prevented any but the largest hotels and great department stores from installing pneumatic tubes, as they were not able to incur the first cost of installation and the unreasonable expense of maintenance. All of these conditions have been carefully considered by the inventors of the "Davistor" devices, and the first cost is now within reason, and the cost of operating practically eliminated.

The "Bay Shore Cut-off"

The largest railroad cut on the Pacific Coast, if not in the whole country, was very recently completed by the Southern Pacific Company, on what is known as the "Bay Shore Cut-off," near San Francisco. This colossal cut was made for the most of the distance through rock. The total excavation reached 800,000 cubic yards; entire length of the cut is 1250 feet; width of cut at the top, 300 feet; width at the bottom 60 feet (for four tracks); depth of cut at highest point 150 feet. From these figures, some idea may be formed of the dimensions of this cut.

More than two years were required to complete this enormous cut. A large force of men were employed, supplemented by several large dump trains and six powerful steam shovels. The total cost of the work reached about $500,000.

It may be added that the total length of the "Bay Shore Cut-off" does not exceed nine miles, yet the cost of constructing that short stretch of road will reach not less than $5,000,000.

The Atkinson Tilting Window

An exhibit of the Atkinson Tilting Window is to be made at the State fair in Sacramento. This window has been pronounced the best and cheapest tilting window on the market. It is less expensive and the owners claim far more practicable than the Dean window. Several big contracts have lately been signed. The window is extremely simple and as a labor-saving device and danger preventative it has no equal. The San Francisco office is at 430 Monadnock building.

RIPOLIN ENAMEL
for Economy and Effect

BAY STATE BRICK AND CEMENT COATING
Covers Cement in One Coat

RICKETSON'S COLORS
for Mortar and Cement

SPECIFIED BY LEADING ARCHITECTS
INFORMATION FURNISHED

Pacific Coast Agents

KLATT-HIRSCH & CO.

PAINTS, OILS, GLASS, VARNISHES, BRUSHES

PHONE, TEMPORARY 384. 113 Front Street, SAN FRANCISCO

THERE IS ONE
and only one way to get best results from the use of
PRISM GLASS
and that way is to specify Luxfer Prisms to be installed by the

AMERICAN LUXFER PRISM CO.

INGERSON & GLASER CO.
MANUFACTURING AND SALES AGENTS
245 OAK STREET, San Francisco, Cal.

Keystone Boiler Works

MAIN AND FOLSOM STREETS
SAN FRANCISCO

PACIFIC COAST AGENTS FOR THE
PARKER WATER TUBE BOILER

SELF CLEANING ABSOLUTE SAFETY GREATEST ECONOMY

WRITE FOR CATALOGUE



Pacific Fire Extinguisher Co.

Agents for Grinnell Automatic Sprinklers and Fire Alarm Systems. Insurance rates reduced 40 to 50 per cent. Recognized by all fire insurance companies. Estimates furnished free. Correspondence solicited.

PACIFIC FIRE EXTINGUISHER COMPANY

Office and Warehouse, 507 Montgomery Street
G. J. BECKER, Manager. SAN FRANCISCO, CAL.
Telephone, Temporary 3892

CHEMICAL
FIRE APPARATUS

Chemical Engines for Warehouses, Town and City Fire Departments. Combined Hose and Chemical Wagons. Hose Carts and Hook and Ladder Trucks : : : :

STEMPEL Gold Medal, and Aaron Extinguishers

PAUL BRANT, No. 9 MISSION ST. SAN FRANCISCO
PHONE TEMPORARY 3011

CEMENT TESTS

Complete Chemical and Physical Tests according to the Specifications of the American Society of Testing Materials and also

GENERAL CHEMICAL ANALYSIS
Accuracy Guaranteed

IRVING C. ALLEN
EXPERT CHEMIST

CONSULTING LABORATORY
BEACH AND MASON STS., SAN FRANCISCO
PHONE FRANKLIN 1052

WHITE BROTHERS

Importers and Dealers in

Hard Wood Lumber

Ship Plank and Oak Timber, Cabinet Woods, Veneers, Walnut, Primevera Oak, Hickory, Ash, Mahogany, Cherry, Spanish Cedar, Poplar, Maple, Etc.

S. E. Cor. Spear and Howard Sts.
SAN FRANCISCO, CAL.

O. M. BULLOCK

DESIGNER AND BUILDER

¶ Plans and Specifications Furnished ¶ Remodeling and Building a Specialty ¶ Get my Figures . . . .

1420 Broadway
OAKLAND, CAL.
Phone Oakland 2538

CORRUGATED STEEL ROLLING SHUTTERS
COPPER AND BRONZE ROLLING SHUTTERS
WOOD ROLLING DOORS AND PARTITIONS

WALTER HENDERSON
CONTRACTING AGENT

STRUCTURAL STEEL
ORNAMENTAL IRON AND BRASS
PATENT STORE FRONTS
EXPANDED METAL LOCKERS

110 Bush Street
SAN FRANCISCO
Telephone Franklin 752

Home A 2157
Main 68
1323 Berendo St.
Res. Home B4843

MARK KIRKBY
PRACTICAL TILE AND SLATE ROOFER

Estimates Furnished. Complete Roofing Jobs

Agent for Akron, Ohio, Roofing Tile and Eureka Black Roofing Slate

Office, 226 Stimson Block LOS ANGELES, CAL.

The Broomless Era

It seems only fair that some of the miracles of this wonder-working age should be enjoyed by the faithful housekeeper.

The horseless age which so lately seemed an impossibility, has apparently come, and now, though seeming equally impossible to the housekeeper comes the promise of a broomless era.

The broom, after all, has been a senseless sort of institution, stirring up the dust, which had lain peaceably and unobtrusively in out of the way places, and inciting it to violent and riotous action. Clouds of dust were swirled through the air only to fall again upon carpet, curtains and furniture, and then be flirted uncertainly about again by the duster brandished in the wake of the broom.

Instead of this irrational method of attempting to be void of dust and dirt, a more reasonable and more effective one has been discovered and is in reality coming to be used.

In one of the newest apartment houses in the East, it is said that there will be no need of a broom from cellar to garret. Every suite is equipped with an apparatus by which dirt and dust may be gathered up by suction and sent through a rubber hose and a pipe to the basement. Almost everyone is familiar with the working of the vacuum system of cleaning, but it is surely a matter of some interest to note that this method is gradually being adopted to general use. In another generation sweeping and dusting may have become a forgotten exercise.

WANTED—Position as electrical or civil engineer. Has had abundant experience and will give references. Address, Byrd M. Williams, Gainesville, Tex.

An Index to the Advertisements

New Advertisers Not Noted Here Will Be Classified Next Month

Hirsch & Kaiser's New Catalogue

Hirsch & Kaiser, of 1757 Fillmore street, San Francisco, have recently issued a model catalogue, and one that should be in the hands of every photographer on the Pacific Coast. It is handsomely printed, fully illustrated, and covers everything in the way of desirable photographic supplies at present obtainable. The firm has such a large business and has so many special lines which it carries exclusively, that a catalogue of their goods at this date is sure to be a book of the greatest value to any one wishing to be informed on the newest and best that is obtainable. The opportunity to secure such a handsome catalogue of such completeness, particularly of goods so abundant in variety, is not often presented.

A Successful Staff and Stucco Business

Few men in the building line have met with greater business success the past year or two than J. Fred Jurgewitz. Beginning with a modest workshop in the rear of his home in East Oakland his business expanded until larger quarters and more help were necessary. The little six by ten shop has been replaced in a new location by a building of generous dimensions and with accommodations for a dozen workmen. The structure is two stories and was built by Mr. Jurgewitz expressly to carry on his constantly growing staff and stucco business.

There is a studio, attractively fitted up with models of some of the artist's best work; a cozy private office; a large work room; and upstairs is a store room for raw material as well as finished casts and models. The building is 26 by 48 feet and is located on the hill at 14 to 16 Twentieth avenue, East Oakland. The contractor's home is directly in the rear of the work shop.

Mr. Jurgewitz's success may be largely attributed to the excellence of his work. He has a thorough knowledge of the trade and he never undertakes a job without first guaranteeing satisfaction. Architects who have employed him say his work is first class which accounts for so many of them retaining his services without thought of change. Mr. Jurgewitz possesses an artistic temperament that is in evidence in his work.

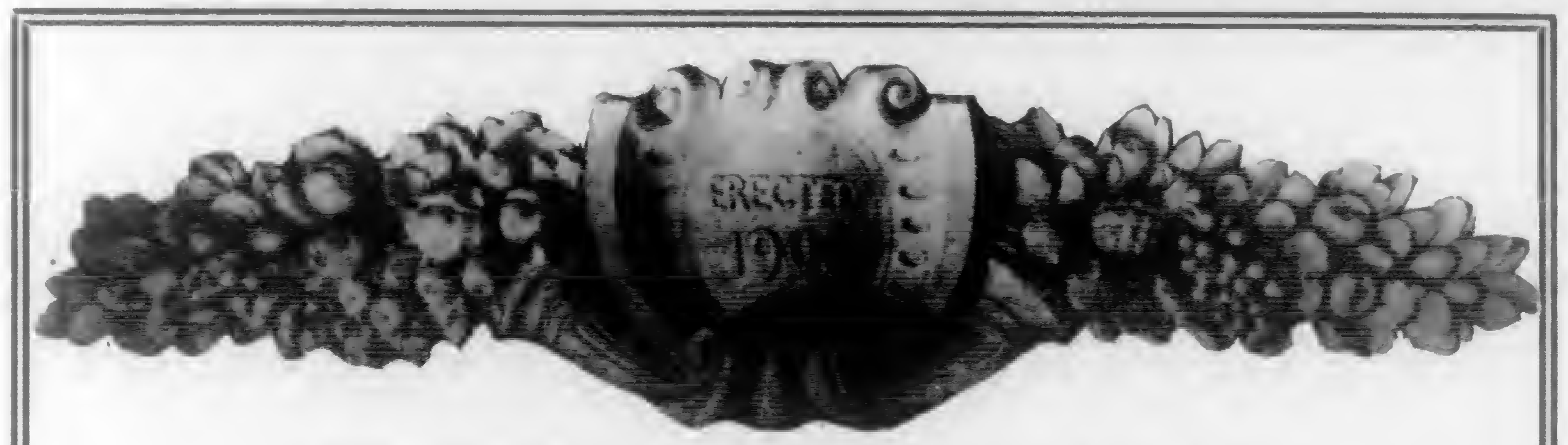
Among the contracts which he has lately completed are the Masonic Temple in Berkeley, Columbia Theater, Oakland; fire house, Oakland; Hotel Avalon, Masonic Temple, Santa Rosa; and the Dunn, Woolsey and Glasscock residences, Oakland.

"Little Giant" Oil Burners

Many of the new buildings going up in San Francisco are being equipped with Little Giant oil plants, manufactured by the well-known firm of G. E. Witt Co., inc. The company makes oil burners for every purpose where steam or air is used to atomize with. A specialty is made of steam heating plants. The company claims its burners will save from 10 to 20 per cent over others, besides obtaining the highest evaporation and efficiency possible with crude oil.

FOR SALE.—I. C. S. Bridge and Structural Engineering Course, including text books. About half price. Call 621 Monadnock building, San Francisco.

WANTED.—Position; have had experience in designing, drafting and sketching; also mechanical and structural engineering. H. Van Velzen, 869 Eighteenth street, Oakland, Cal.



A Clever Piece of Staff Work by Mr. Jurgewitz after Design by Stone & Smith, Architects



St. Marks Hotel, Oakland. Ben G. McDougall, Architect. John B. Leonard, Engineer. Lindgren & Hicks Co., Contractors.

Henry T. Scott, *President* — John B. Leonard, *Engineer*
John F. Davis, *Vice-President* — E. M. C. Whitney, *Secretary*

Telephone - Temporary 1928.

WESTERN INSPECTION BUREAU

¶Mill, Shop and Field Inspection of Bridge, Building and Ship-Building Material, Pipe, Boiler-Plate and Railroad Equipment.

¶Chemical and Physical Tests of Iron, Steel, Concrete, Re-inforced Concrete, Brick, Stone and Terra Cotta. ¶Formulæ, Analysis and Tests of Aggregates for Concrete Work. ¶Consultation of Plans and Specifications. ¶Inspection and Superintendence of Construction.

A FEW SAN FRANCISCO BUILDINGS RECENTLY INSPECTED BY US

			ARCHITECTS
Whittell Building		17 stories	Shea & Shea
Marston Building		8 "	Meyer & O'Brien
Quick Building		7 "	C. J. Colley
Station C (San Francisco Gas and Electric)			Wright and Polk
Berkeley Masonic Temple		4 "	Wm. H. Wharff
Whitney Building		8 "	J. R. Bowles
Alta Investment Bldg.	(Bases)	8 "	J. E. Freeman
Alaska Commercial "	(Stacks, Bases Tanks)	9 "	Myers and Ward
Metropolis Bank "	(Bases)	15 "	L. B. Dutton
Johann Schmidt "	(Bases)	10 "	Herman Barth
Oscar T. Luning "	(Steel)	3 "	Nathaniel Blaisdell

Main Office:
621 Monadnock Building
San Francisco

234 HELLMAN BLOCK
142 So. Broadway, Cor. 2nd, Los Angeles, Cal.
Home Phone 5747

CHICAGO *PITTSBURG* *PHILADELPHIA*

— PATENT. —
HYDRAULIC SEA-GOING SELF-PROPELLING DREDGE DISCHARGING THROUGH 6000 FT. OF PIPE.

MAIN OFFICE:
San Francisco
BRANCH OFFICES:
New York, Jacksonville, Fla., Los Angeles, Cal., Galveston, Seattle, Honolulu.



NORTH AMERICAN DREDGING CO.

GENERAL CONTRACTORS AND ENGINEERS

HARBOR IMPROVEMENTS AND DREDGING MACHINES

OAKLAND, CALIFORNIA

BACON BUILDING, ROOMS 76-77-78 — TEMPORARY OFFICES ACCT. OF S. F. FIRE

Jobbers of

Plumbing and Steam Supplies

Radiators, Boilers, Storage Tanks

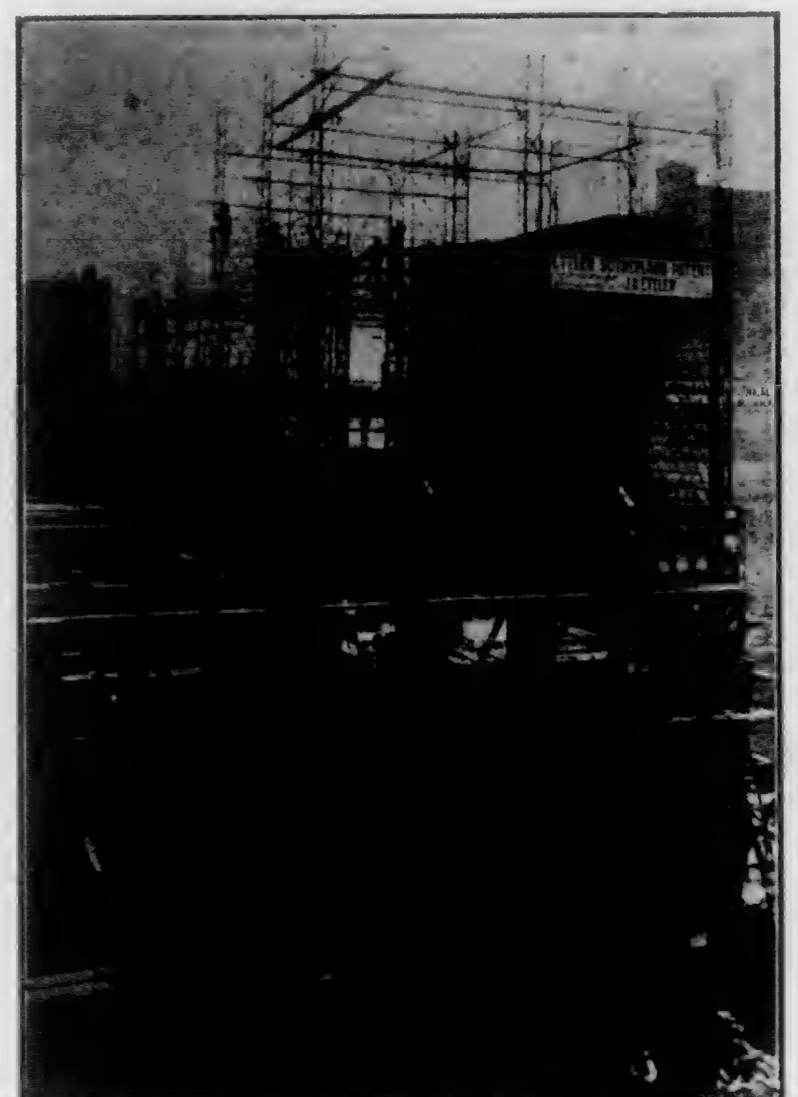
Wrought Iron Pipe, Malleable and Cast Fittings, Brass and Iron Valves

GEORGE H. TAY CO.

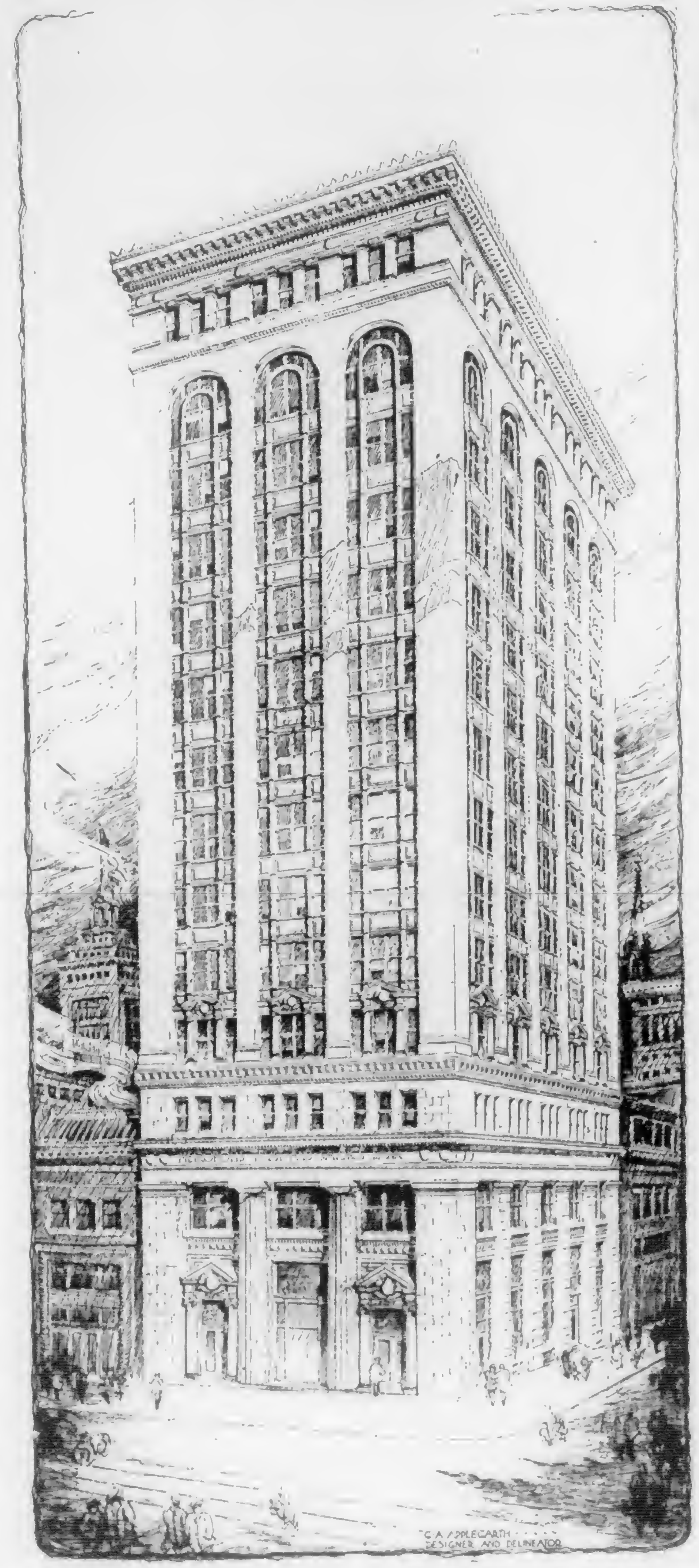
San Francisco, Office and Store 19th and Minnesota Sts.
Warehouse 20th and Indiana Sts. Telephone Market 1710

Oakland's New City Hall

Three sets of plans are being prepared for Oakland's new City Hall, to give the Council some idea of what will be required, and they all provide for two separate buildings, one of which it is proposed to locate on the triangular park space in front of the present City Hall, and the other, which will contain the jail and the Police Courts and Police Department, will be located on the site of the present City Engineer's building. The first building, which will face on San Pablo avenue and extend back to the proposed Washington-street extension, will be used for the city executive offices.



Building for the Owl Drug Company, Mission Street near Second, San Francisco



METROPOLIS BANK, San Francisco

L. B. Dutton, Architect Thompson-Starrett Co., Contractors



The Morris Brown Building, Sutter Street, San Francisco.

M. J. LYON, Architect

This Handsome Building Now Under Construction by the

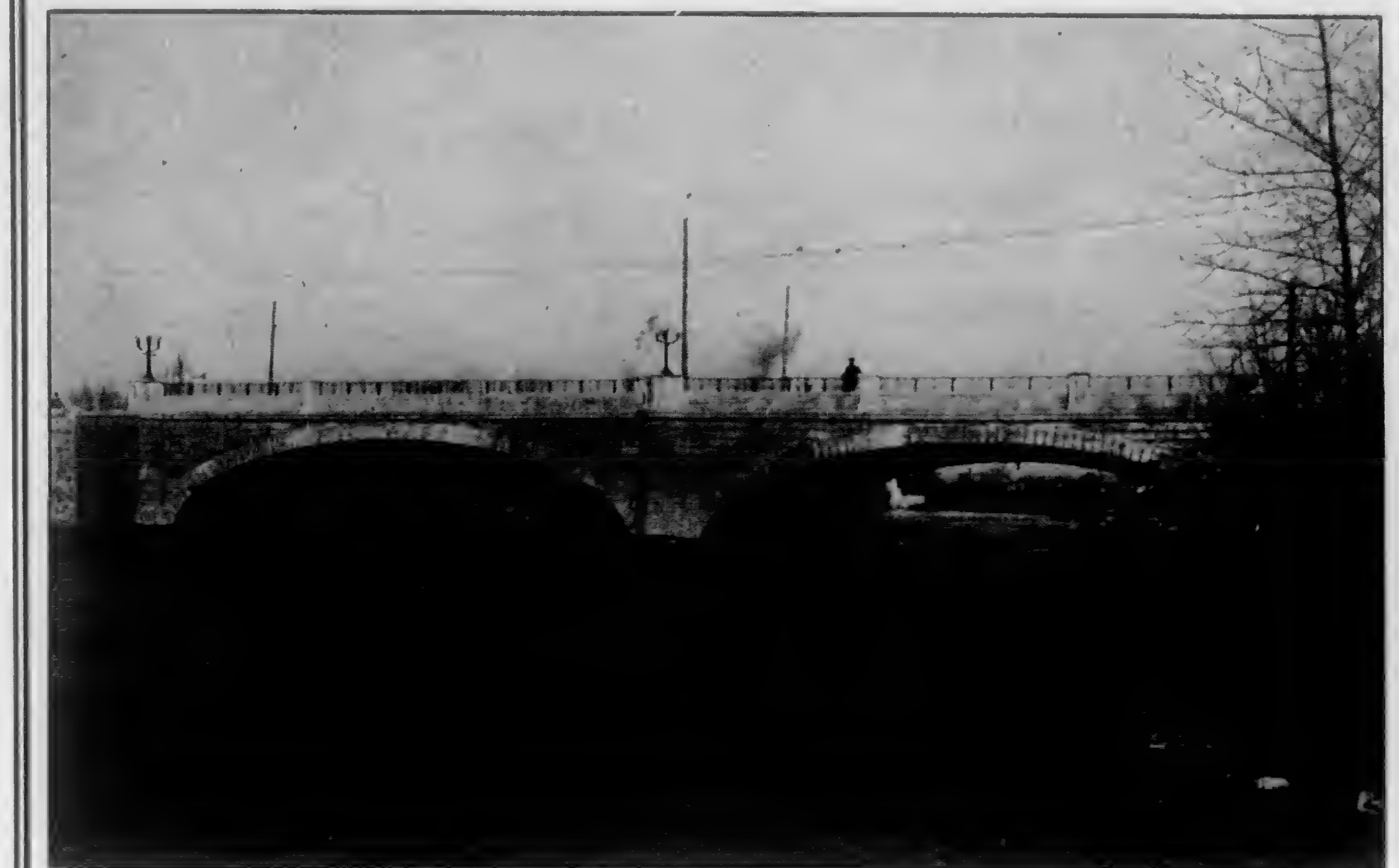
JOHN C. INCE CONSTRUCTION CO.

CONTRACTORS AND ENGINEERS

Room 210, McCLOUD BUILDING,
No. 406 Sutter Street, corner Stockton

HEAVY MASONRY
COMMERCIAL BUILDINGS
MILL CONSTRUCTION
REINFORCED CONCRETE

Telephone Temporary 3301
San Francisco, Cal.



REINFORCED CONCRETE BRIDGE AT RENO, NEVADA. TWO 65-FT. SPANS. 80-FT. WIDTH.

COTTON BROS. & CO.

GENERAL CONTRACTORS

Buildings, Bridges, Power Plants, Factories

CONSTRUCTED OF REINFORCED CONCRETE
OR OTHER MATERIALS

PILE DRIVING, WHARVES AND PILE FOUNDATIONS

The system of executing contracts on a basis of "Cost-plus-a-fixed-sum" gives most satisfactory results to owners as well as protection from exorbitant charges. Every detail of the work, its cost, its quality, the progress, are constantly under the owner's supervision. He knows at all times how much and for what his money has been spent. He knows how much remains to be spent. Many ways of expediting work develop as work progresses, and these are taken advantage of to the benefit of the owner and not the contractor.

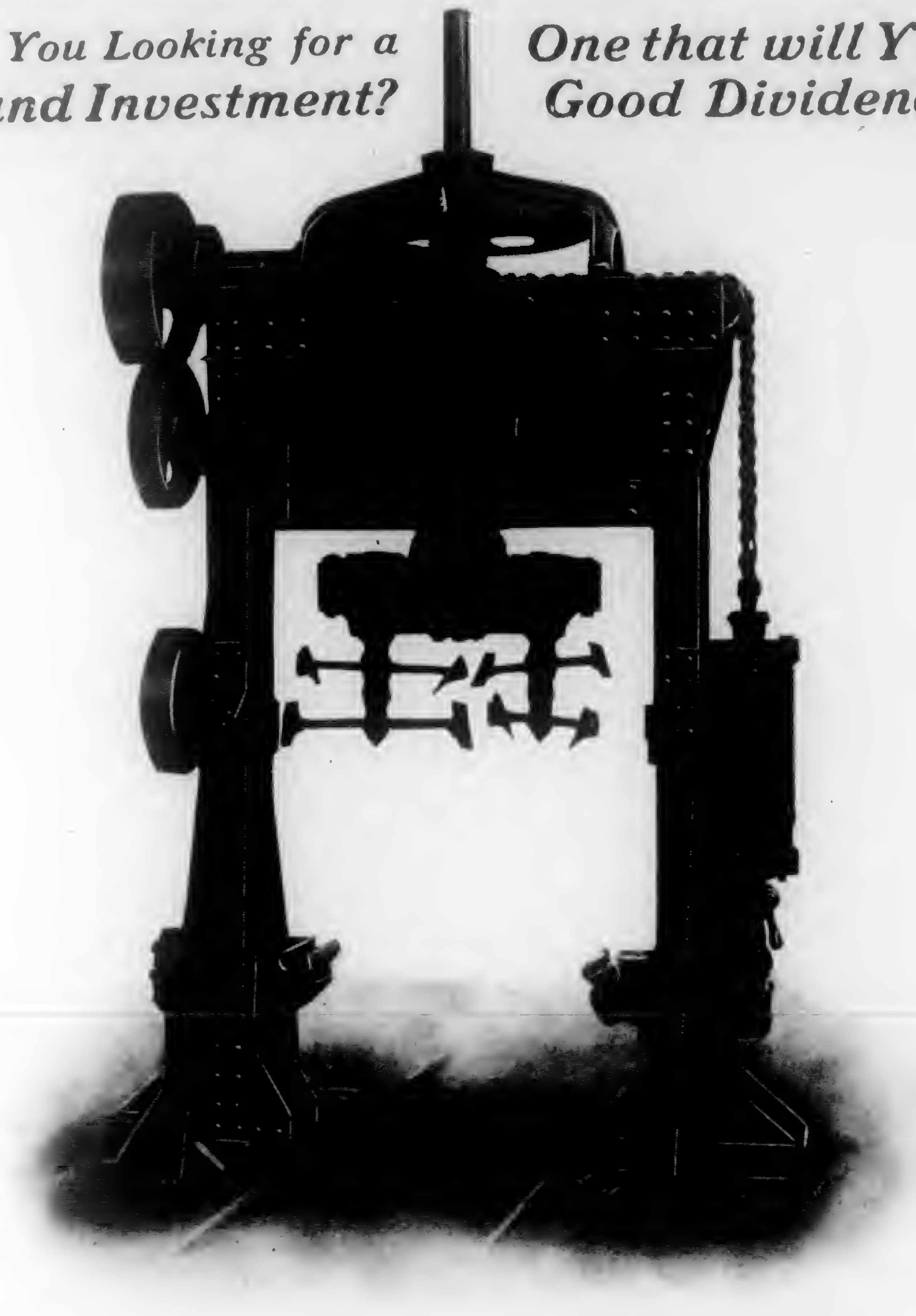
This method allows the owner to have the use of our equipment (one of the best on the Coast)—the services of a trained force of men to work together to the best possible advantage to save cost and hasten work. It gives the owner the benefit of the experience gained by this firm in many years of heavy construction.

By this system we are able to work in absolute harmony with the owner and his architects to obtain the best results in speed at a minimum cost. Consultation solicited.

MONADNOCK BUILDING
SAN FRANCISCO, CAL.

BACON BUILDING
OAKLAND, CAL.

Are You Looking for a Sound Investment? *One that will Yield Good Dividends?*



OUR PATENT UNIVERSAL MIXER AND GRINDER

BUY SHARES IN THE

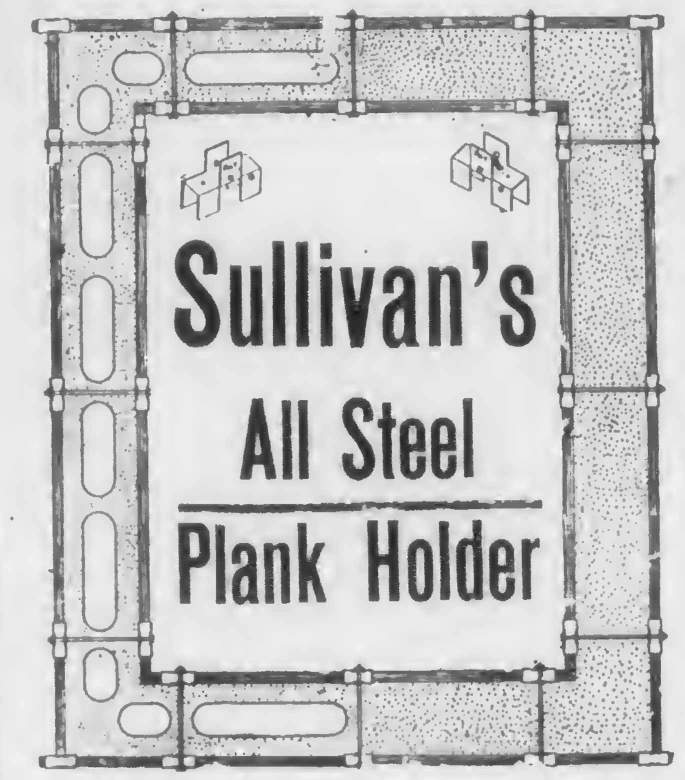
INTERLOCKING STONE COMPANY, Inc.

Sole owners of Peterson's System of Reinforced Interlocking Concrete Building Stone. Manufacturers of Solid Reinforced Interlocking Concrete Stones and all Machinery Necessary for their Production. Stock was advanced July 1 from $3 to $5 per share. BUY NOW as another advance will be made shortly.

Office and Plant, 563 Ninth Street, Oakland, Cal.

You can save money

On every concrete structure—by using



Sullivan's Plank Holder does away with nailing and makes the use of lumber again and again, possible. This device, which is patented, is easily and quickly applied and removed and saves its cost over and over.—Other contractors are saving money by its use. Are you? WRITE FOR BOOKLET

J. H. SULLIVAN, 444 Herris Bldg., Grand Rapids, Mich.

Van Wagner Bros.

Plastering, Brick, Stone and Cement Work. Cement Contractors of New Casino and Bathing Pavilion, Santa Cruz.

Work Done in Any Section of California

Address:

Santa Cruz.

CEMENT

Guaranteed to Stand San Francisco Board of Public Works Specifications

Structural Steel
Coke and Pig Iron

Girvin & Eyre

Merchants' Exchange Bldg.

SAN FRANCISCO

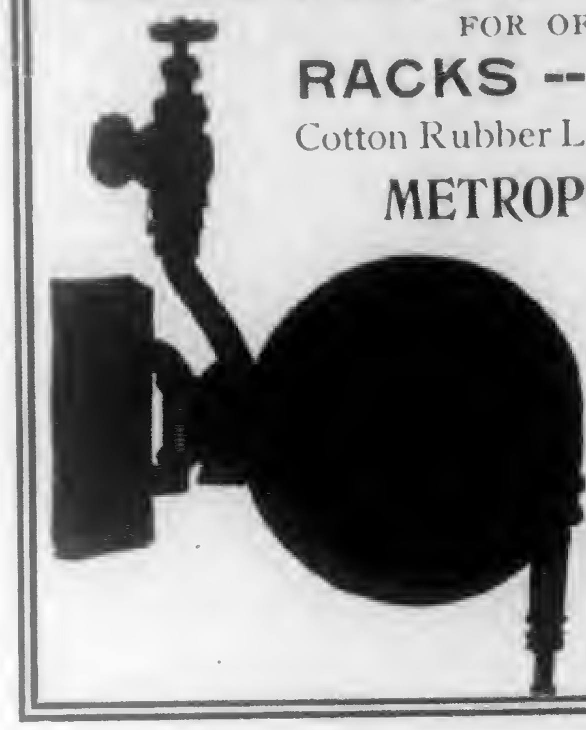
Cement
Structural Steel
Pig Iron
Coke, Etc.

G. W. McNEAR

210 BATTERY STREET

San Francisco, Cal.

GOODYEAR'S PROTECTION FROM FIRE



FOR OFFICE BUILDINGS, FACTORIES AND RESIDENCES

RACKS -- RUBBER FIRE HOSE -- REELS

Cotton Rubber Lined Hose. Underwriters Unlined Linen Hose

METROPOLITAN FIRE EXTINGUISHER

Always Ready for Use

RUBBER MATTING

Stair Treads and Strips

RUBBER TILING

Send for Estimates



Goodyear Rubber Co.

573-579 Market St., San Francisco

—— Same Location we had before the Fire ——



Grille Work

Stair Work

Office and Bank Railings

Wire Guards

Elevator Enclosures and Cars

Electrolier, Fresno City Hall

MADE BY

White Ornamental Iron Company

Office and Works, Foot of Fifth Ave., Oakland
Telephone Merritt 57

San Francisco Sales Office, 499 Monadnock Bldg.
Telephone Temporary 2997



THE ENOS COMPANY

Of New York

Makers of LIGHTING FIXTURES

SPECIAL DESIGNS AND ESTIMATES

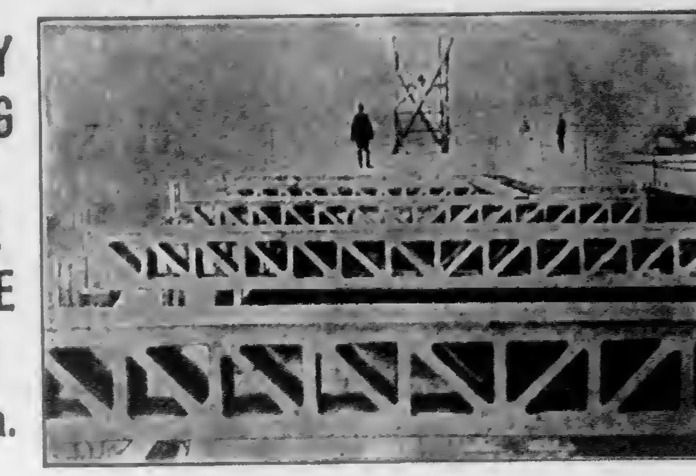
Gough and Pine Streets
SAN FRANCISCO

"TINY"-VISINTINI SYSTEM of Reinforced Concrete



Exterior of Building

FACTORY BUILDING FOR TEXTILE MACHINE WORKS Reading, Pa.



Showing "Tiny" floor beams 40,000 sq. ft.

CONCRETE & STEEL ENGINEERING CO.

CONSULTING ENGINEERS

410 Kearny Street San Francisco, Cal.

Owners of Visintini, Franke, Eggert and other Patents.

Specialties { Buildings, Foundations, Factories, Bridges, Power Plants, Sewerage, Sewerage Disposal, Purification.

The "TINY"-VISINTINI SYSTEM of Reinforced Concrete is the best, most economical, strongest and most efficient Reinforced Concrete System in the world.

The System saves 25% in Concrete, 10% in Steel, 75% in Form and Carpenter Work.

It can be applied in every form of building, as well in light as in heavy constructions. For instance, as for 500 lbs. live loads and again for spans from 10 to 120 feet. We have more than 75 Concessionaries in all parts of the world, among these, Representatives in New York, Chicago, Philadelphia, Los Angeles, San Francisco, Berlin, Munich, Vienna, Paris, St. Petersburg, Zurich, Cairo, etc.

Testing of Bridge Girders



WANTED Contractors TO TAKE LICENSES IN ALL CITIES AND TOWNS IN NORTH & CENTRAL AMERICA.

MOST FAVORABLE CONDITIONS

Bridge in Berzdorf, I. S.



Van Emon Elevator Company Not Affected

To the Editor of the Architect and Engineer:

Sir,—You have probably noticed in the daily press that the Otis Elevator Company has obtained a favorable decision in its patent suit against B. C. Van Emon. Many of our customers and friends have concluded from this publication that the Otis Elevator Company had finally succeeded in its effort to put its only formidable local competitor, the Van Emon Elevator Company, Inc., out of the passenger elevator business and that the Elevator Trust had obtained a monopoly of the elevator business. Such is not the case.

This decision of the Circuit Court vs. B. C. Van Emon and in favor of the Otis Elevator Company is a personal matter affecting Mr. B. C. Van Emon but not the Van Emon Elevator Company, Inc., which has not been sued by the Otis Elevator Company. However, the Van Emon Elevator Company feels an explanation is necessary because the public is slow to distinguish the important legal difference between the man, Van Emon, and the corporation bearing his name. The Van Emon Elevator Company, Inc., is no more restrained by this decision against B. C. Van Emon than is the A. B. See Company of New York, (the largest competitors the Otis Elevator Trust has in the Eastern States), the Westinghouse Electric & Manufacturing Company of Pittsburg (which manufactures and catalogues an "electro-magnetic control" elevator car switch, identical with the Otis control), the Cutler-Hammer Company (manufacturers of similar elevator car switches), the Schureman Company of Chicago (manufacturers of "electro-magnetic control" elevator car switches) and several other big corporations that have been manufacturing and selling this apparatus for years on the advice of their patent attorneys,—"that the Otis 'Baxter patent' (for an electric switch in the elevator car controlling an electric motor with a constant current system) was worthless, because antedated by the 'Paine' patent (already expired); and because the modern electric system uses a 'constant potential current', which will not operate the Baxter System of Elevator Control."

The Baxter Patent expires next March in any event, and in the interval the attorneys for Mr. Van Emon have applied for a "rehearing" before Judge Whitson, (which application acts as a stay of the whole proceedings). They have also filed an appeal from his decision that will come before the United States Circuit Court of Appeals some time this summer, or early in the fall. Mr. Van Emon and his attorneys feel positive that the appeal will be successful, and that the Baxter Patent will be declared invalid.

Meantime the Van Emon Elevator Company, Inc., will continue to contract for and install elevators with electro-magnetic control, believing that the device is no more patentable (considering its universal and common use for the past twenty years) than a common electric key switch in a lamp socket, or a push button for a call bell.

The Van Emon Elevator Company, Inc., also stands ready to protect with an indemnity bond all purchasers of its magnet control passenger elevators against any litigation commenced by the Otis Elevator Company. Such protection is not required in contracts specifying rope control, and mechanical lever control of elevator cars which are not influenced by the Court's decision. Notwithstanding this fact the agents of the Otis Company have also (in spite of the United States Government's prohibition vs. the employment of such "Trust methods") threatened users of this apparatus.

The lawsuit of the Otis Elevator Trust against B. C. Van Emon was commenced five years ago as a spite suit to harass a dangerous rival and drive him out of business. For several years the Otis Elevator Company delayed the suit's adjudication and kept it (with its menace of legal proceedings vs. purchasers) hanging over the heads of architects, contractors and owners to compel them to pay an exorbitant price for Otis elevators.

Legal action was confined to B. C. Van Emon because the Otis Company did not own his business and could not control his bids. It did own Cahill & Hall, McNicol and other local concerns and bid collusively with them (to the great injury and loss of San Francisco owners) until enjoined by the United States Government suit of April, 1906. It was only when the so-called "Baxter" patent had about eight months to run, that it seemed an "everything to gain and nothing to lose" policy, to argue the case and chance an unfavorable decision.

Believing that we have made the position of the Van Emon Elevator Company, Inc., plain to you as outlined in the premises, and believing we can count on your loyal support in our fight against this Twenty Million Dollar Elevator Trust that manufactures its apparatus and distributes its wages in New York, Chicago, Illinois, and Philadelphia, Pa., and pays its dividends to Eastern stockholders, we remain, very truly yours, Van Emon Elevator Company, per H. B. Rathbone, Secretary and Treasurer.

P. S.—Remember that when you buy a Van Emon Elevator you help to rebuild San Francisco and keep your money on the Pacific Coast, as our equipment is manufactured at home and our employees and stockholders live here.

Residence: 1406 Filbert St.

D. ROSS CLARKE

Plastering and Cement Contractor

Ornamental Plastering and Cement Plastering on Reinforced Concrete a Specialty

Box 258
Builders' Association

San Francisco

C. A. WESTCOTT PAINT CO.

HOUSE, SIGN AND SHIP PAINTING

Dealers in Oils, Mixed Paints, Copper Paint, Submarine Compounds, Marine Paints. Ship Painting a Specialty.

TELEPHONE JAMES 1411

150 East Street, San Francisco, Cal.

Spencer Desk Co.

SCHOOL DESKS
OPERA CHAIRS
AND
ASSEMBLY HALL SEATING

EXCLUSIVE AGENTS FOR THE
STEEL STANDARD SCHOOL DESK AND OPERA CHAIR

509 Montgomery Street, San Francisco

HOYT BROS.

General Contractors

We are prepared to Contract Work in San Francisco and other Bay Cities as well as other portions of Northern California

Correspondence Solicited

Builders Exchange
San Francisco, Cal.

Santa Rosa, Cal.

HIPOLITO REVERSIBLE WINDOWS

Modern, practical, economical. As necessary to modern building equipment as electric lighting. Admit perfect ventilation and cleaning from the INSIDE. Used in the best and largest residences and office buildings in Los Angeles. . . . . . .

Descriptive Literature sent on request.

HIPOLITO SCREEN AND SASH COMPANY

634-638 Maple Avenue

Main 1806 — Home 5190

PHONE: FELL 9246

T. V. GALASSI, Pres. — G. A. SCHUSTER
R. D. PORTER, Sec. — W. T. STEWART

GALASSI MARBLE & MOSAIC CO.

DESIGNERS AND CONTRACTORS

MARBLE, MOSAIC, TERRAZZO TILES, FLOORS, STEPS, WAINSCOT, DECORATIONS

Office, Factory and Show Rooms

1121 FELL STREET, Near Devisadero
SAN FRANCISCO

Member Builders' Association — Member Builders' Exchange

THE FRANKFORT

Marine, Accident and Plate Glass Insurance Company

OF FRANKFORT-ON-THE-MAIN, GERMANY

Established 1865

Capital - - - -	$1,250,000.00
Deposited in the United States -	200,000.00

Voss, Conrad & Co.

Managers

Rooms 229-231-233 Monadnock Building
SAN FRANCISCO

Telephone Temporary 2717

VALVOLINE OIL CO.

440 Brannan St., San Francisco, Cal.

LEONARD & ELLIS DEPARTMENT

OIL REFINERS

Cylinder and Engine Oils

SHOW BEST RESULTS AT MINIMUM COST

PACIFIC COAST BRANCH HOUSES:

Portland, Oregon — Tacoma, Washington
Seattle, Washington — Los Angeles, Cal.

Works, Edgewater, New York

ISAIAS W. HELLMAN, President

I. W. HELLMAN, JR., Vice-President — GEORGE GRANT, Asst. Cashier
F. L. LIPMAN, Vice-President — W. McGAVIN, Asst. Cashier
FRANK B. KING, Cashier — E. L. JACOBS, Asst. Cashier

Wells Fargo Nevada National Bank

OF SAN FRANCISCO

Union Trust Building, No. 4 Montgomery Street

Capital Paid Up - - - - - - - -	$6,000,000.00
Surplus and Undivided Profits - - - -	4,584,805.19
Total - - - - - - -	$10,584,805.19

DIRECTORS:

Isaias W. Hellman	Dudley Evans	Wm. F. Herrin	Percy T. Morgan
Robert Watt	E. H. Harriman	Herbert E. Law	J. Henry Meyer
Leon Sloss	A. Haas	James L. Flood	F. L. Lipman
C. DeGuigne	I. W. Hellman, Jr.	F. W. Van Sicklen	

H. N. Cook Belting Co.

MANUFACTURERS OF

GOLDEN STATE
PATENT STRETCHED LEATHER BELTING

Corner Fremont and Howard Streets — *SAN FRANCISCO, California*

GREEN'S ECONOMIZER

Saves 10 to 20 Per Cent in Fuel

Besides keeping a reserve of Hot Water to meet sudden demands for power, prevents sedimentary deposit in boilers. Other savings fully explained in our free booklet.

"Green's Economizer"

Charles C. Moore & Co., Engineers

Contractors for

Complete Power, Lighting, Mining and Pumping Plants

Corner Mission and First Streets
San Francisco, Cal.

Temporary Branch Office
407 Fourteenth Street, Oakland, Cal.

Branches: **Los Angeles, Seattle, New York.**

GEO. E. MILLER, Manager — Telephone Temporary 405 — R. T. MURRAY, Asst. Manager

Pioneer Asphaltum and Artificial Stone Pavement Co.

Incorporated

Rock Asphaltum For Sale — Artificial Stone and Asphaltum Sidewalks — Asphaltum Roofing a Specialty

710 MONTGOMERY STREET, SAN FRANCISCO

C. J. HENDRY CO.

Formerly C. J. Hendry

42 CLAY ST., San Francisco, Cal.

SHIP CHANDLERY AND NAVAL STORES

Agents Leduc Tule Impt. Co.

LAKE & CO.

IMPORTERS AND WHOLESALE DEALERS IN

BRUSHES, BROOMS, WOODENWARE, Etc.

159 South Park, San Francisco, Cal.
Tel. Temporary 1119

REMOVED

PATRICK & COMPANY

RUBBER STAMPS, ETC.

Telephone Franklin 1788 — 126 BUSH STREET

BEMIS BRO. BAG CO.

IMPORTERS AND MANUFACTURERS

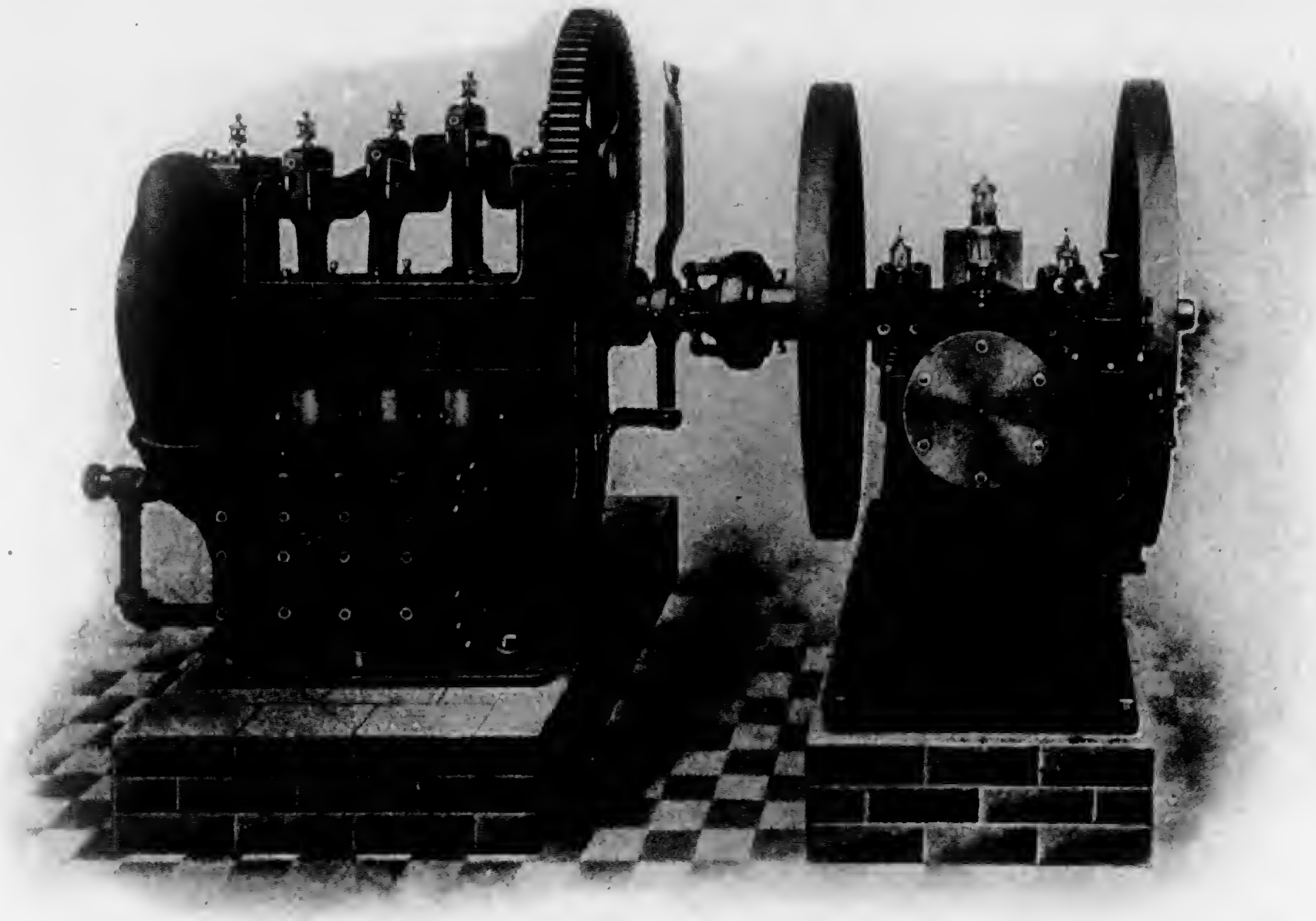
COTTON AND JUTE BAGS

BAGGING :: TWINES :: COTTON WASTE

SANSOME AND VALLEJO STREETS

SAN FRANCISCO - - - CALIFORNIA

KEEP THE LARGEST STOCK — *DO THE BEST WORK*



ALAMO

GAS, GASOLINE AND DISTILLATE ENGINES

Render Carburetor trouble impossible.
Cannot waste fuel if you try.
Do not depend upon batteries for ignition.
Cost no more than other engines but

Do More Work

An economical, dependable power at reasonable cost. From three to fifty horse-power, stationary, electric light, portable or traction, carried at all times by

CAMPBELL BROS.	Seattle, Washington
BULEN-WOOD & CO.	Tacoma, Washington
REIERSON MACHINERY CO.	Portland, Oregon
PHILIP GIRIODI	Stockton, California
JULIUS BEEMAN, Gen. Agt. Lumber Exchange	Portland, Oregon
NORTHWEST MACHINERY CO.	Spokane, Washington
WEIDENTHAL-GOSLINER ELECTRIC WKS.	San Francisco, California
HAMPTON HARDWARE CO.	Marysville, California
THOS. S. NORTON & SON	Los Angeles, California

THE PORTLAND GAS CO.

INSTALL THE ALAMO EXCLUSIVELY

THE ALAMO MFG CO.

JULIUS BEEMAN, Manager

423 LUMBER EXCHANGE BLDG., PORTLAND, ORE.

Builders of Gas, Gasoline and Distillate Engines

We wish more distributors in California.

FUEL OIL BURNERS

IMPROVED LITTLE GIANT OIL BURNERS

LITTLE GIANT TRADE MARK

PHONE MARKET 2109

Modern High Grade FUEL OIL BURNING MACHINERY and Supplies for Power and Heating Plants.

G. E. WITT CO., INC.

Consulting Engineers and Contractors for the Installation of High and Low Pressure Steam Plants

1165 HOWARD STREET SAN FRANCISCO, CAL.

ALFRED W. BURRELL, Pres. A. RAY BURRELL, Sec. and Treas. IRVING H. BURRELL, Vice-Pres.

BURRELL BRIDGE & CONSTRUCTION CO.

ENGINEERS AND GENERAL CONTRACTORS

Steel and Reinforced Concrete Structures, Pile Driving, Wharf and Bridge Building, Wrecking and Reconstruction

513-4-5-6 CENTRAL BANK BUILDING

Phone, Oakland 512 OAKLAND, CAL.

Carnegie Brick & Pottery Co.

M. A. MURPHY, General Manager

VITRIFIED BRICK, PAVING BRICK
FIRE BRICK, FIRE TILE, FIRE CLAY
FIRE BRICK DUST, DRAIN TILE
ACID JARS, ACID PIPES, ACID BRICK

Architectural Terra Cotta, Hollow Tile Fire Proofing, Semi-Dry, Pressed Brick, Terra Cotta Chimney Pipe, Brick and Tile Mantels, Flue Linings, Urns and Vases, Flower Pots. All kinds of Vitrified Salt Glazed Sewer Pipe.

Main Office, Montgomery Block, Montgomery Street, San Francisco
Factory, Tesla, Alameda County, California
Yards, San Francisco, Oakland, Berkeley, San Jose

KAHN SYSTEM

of Reinforced Concrete



The Administration Building of the Geo. N. Pierce Manufacturing Plant at Buffalo taken during the process of construction. This immense plant, having over 325,000 square feet of floor space, was built throughout according to the Kahn System of Reinforced Concrete.

During the past two years manufacturing plants with an aggregate of over 30 acres of floor space have been built according to the Kahn System of Reinforced Concrete, for the automobile industry alone.

BUILD KAHN SYSTEM—IT STANDS TO REASON

The Kahn System is a method of building based on organized engineering skill, experience and facilities for meeting every requirement of Reinforced Concrete Construction in the most economical and efficient way. We insure quality and prompt delivery by manufacturing our own reinforcing material, including the patented Kahn Trussed Bar, Kahn Expanded Metal, Cup-Bar, and Kahn Metal Lath.

"TRUSSED CONCRETE BULLETIN" AND SPECIFIC INFORMATION ON REQUEST



Trussed Concrete Steel Company, Detroit

HEBER & THAYER, Agents, Germain Building, Los Angeles
MAURICE C. COUCHOT, C. E., Agent, Atlas Building, San Francisco

PRESS OF THE HICKS-JUDD COMPANY
SAN FRANCISCO

The Architect and Engineer
Of California

Terms of Subscription, $1.50 per Year

Single Copies, 25 Cents

Issued monthly in the interests of Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast.



Contents for September

PRESS OF THE HICKS-JUDD COMPANY
SAN FRANCISCO

The Architect and Engineer Of California

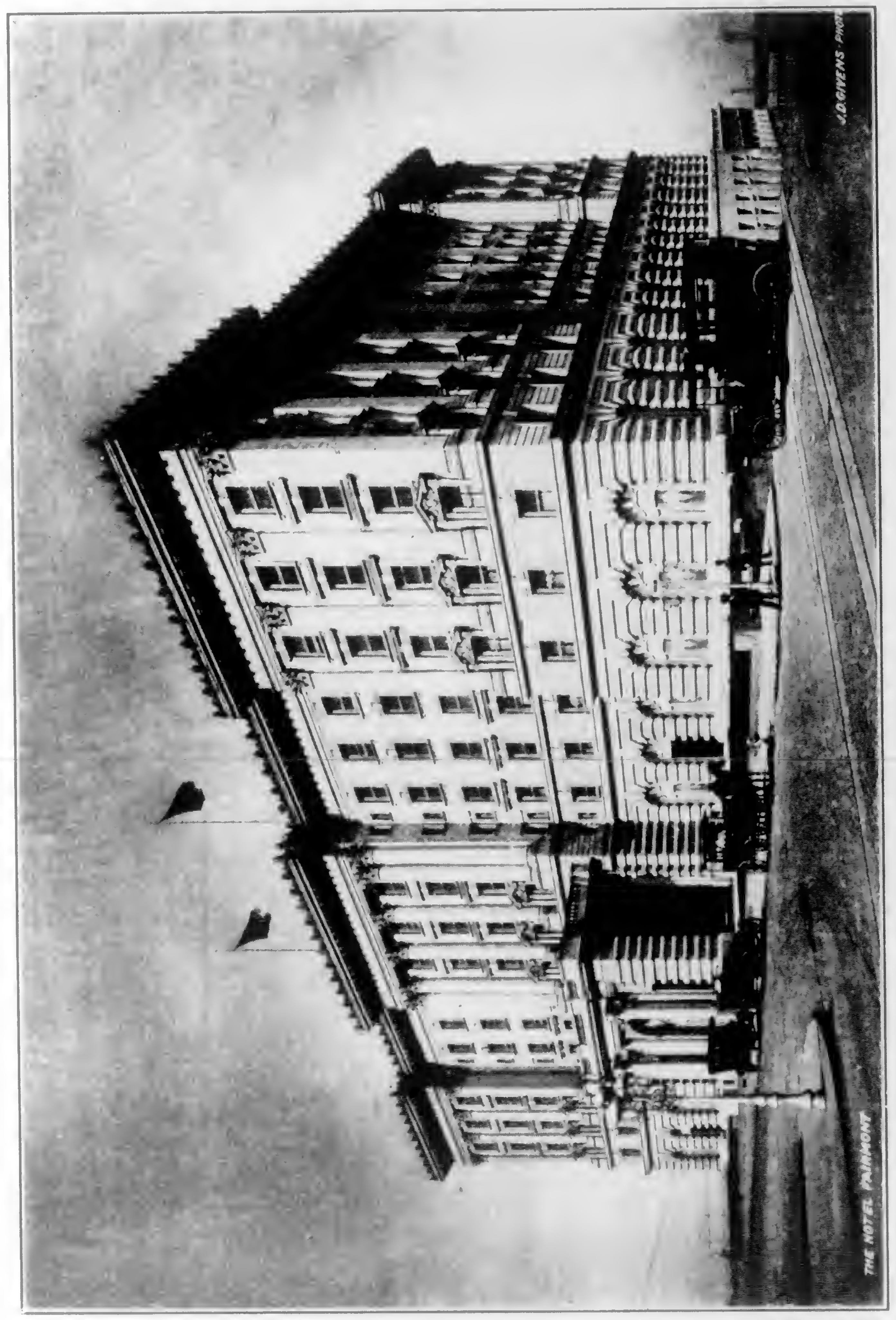
Terms of Subscription, $1.50 per Year

Single Copies, 25 Cents

Issued monthly in the interests of Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast.



Contents for September



THE FAIRMONT HOTEL, SAN FRANCISCO

First Photograph to be Published Since the Actual Completion of the Building *Reid Bros., Architects*

Frontispiece. The Architect and Engineer of California, September, 1907

THE

Architect and Engineer

Of California

VOL. X. SEPTEMBER, 1907. No. 2.

Architecture

Some Wholesome Criticism that Should Benefit the Profession

By F. W. FITZPATRICK, Architect

THESE may be but the idle thoughts of an idle fellow. If any one makes the charge, I will plead "guilty." It is summer, vacation-time, and I am rather pleased to have this little idle while, and the idea of having time to think, idly or otherwise, instead of having to act and quickly, is indeed refreshing. My surroundings are beautiful, peaceful and the temptation is to merely enjoy. Any profound thinking would be irksome; certainly any pessimistic thoughts would be.

Without the slightest trace of pessimism therefore, but merely the resultant thoughts from a little quiet introspect, retrospect, prompted by probably more reading in the last few days than I have had time for in a year prior, suggests the question "What is Architecture today?" The direct cause of that question is a letter I have just received enclosing two clippings from recent issues of the New York Press. One reads:

"They Made Literature."

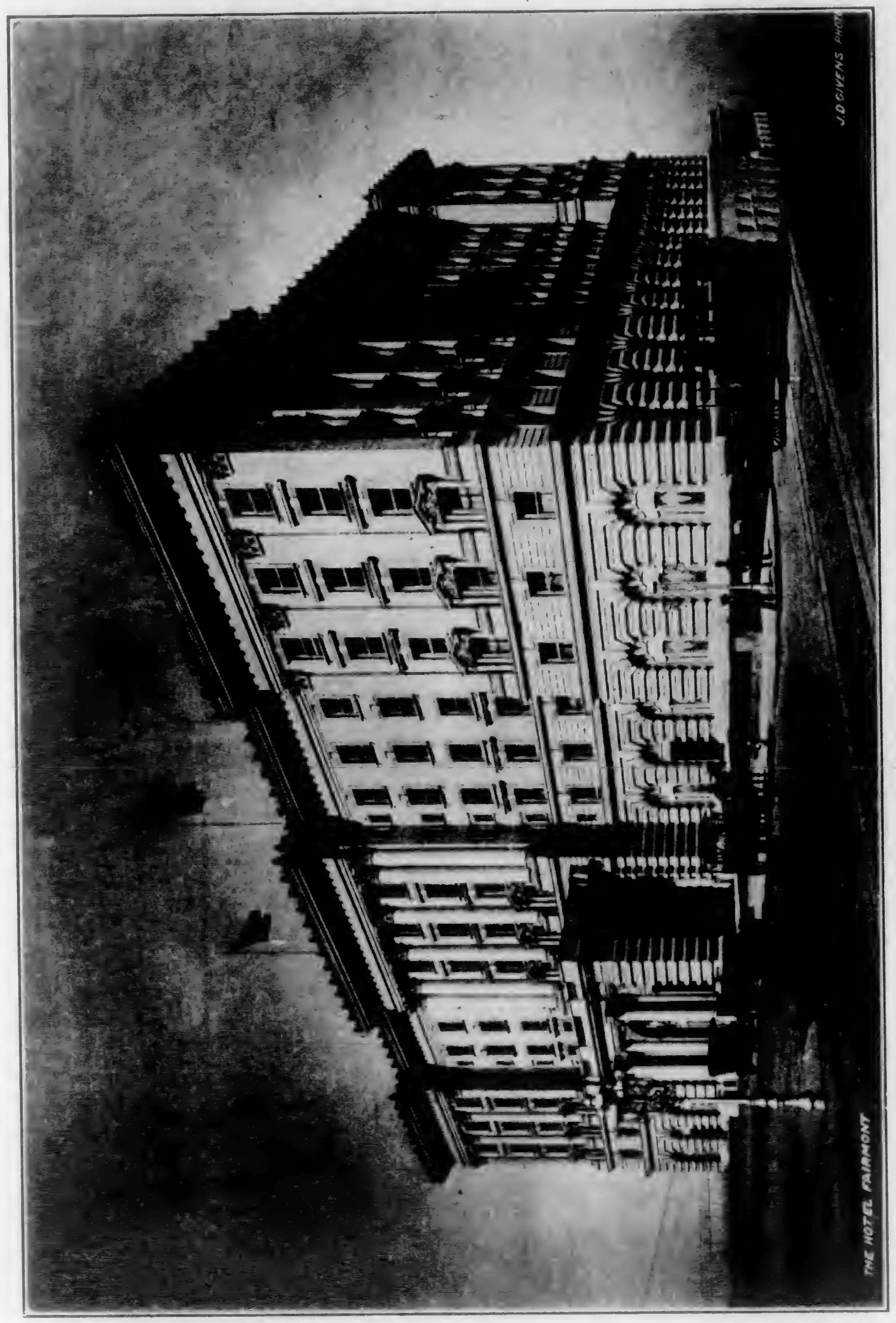
"The architect—and his still more important colleague, the stone cutter—wrote their ambition into stately piles, their soaring fancy into daring, flying buttresses, their grim humor into grinning gargoyles, their romanticism into flowery cornices and vine-twined pillars. Architecture then was literature writ in marble. But in these latter times the architect is the lackey of wealth. He bends above his drawing board, not for fame, but for gain. What might have remained through the ages the noblest of arts has been prostituted to the aggrandizement of the commercially successful and the hereditarily fortunate. Art? Bah, greed in granite."

The other:

"Architectural Fame."

"Let us be frank in these respects. The modern architect as an uplifter of mankind is a distinct failure. He has reached the point where the best that his marvelous mind can produce is a mere shell for elevator shafts, with offices glued to the sides, of a monstrous mausoleum as the home of a public collection or an abode for Midas. For him the years of Midas, surmounted by the cap and bells. Away with tomyrot as to White's civic value! His memory must rest upon his character as a man, for though he may have been the country's greatest architect, there is not in that distinction enough to lift him above the ranks of a myriad others who wear the livery of the dollar-builders."

Thus comments a daily paper. Think of it! For seemingly aeons of time the public press has paid scant if any attention to architecture, and that little not over-intelligent or discriminating. Even our architectural



THE FAIRMONT HOTEL, SAN FRANCISCO

First Photograph to be Published Since the Actual Completion of the Building — *Reid Bros., Architects*

Frontispiece, The Architect and Engineer of California, September, 1907

THE
Architect and Engineer
Of California

VOL. X. SEPTEMBER, 1907. No. 2.

Architecture

Some Wholesome Criticism that Should Benefit the Profession

By F. W. FITZPATRICK, Architect

THESE may be but the idle thoughts of an idle fellow. If any one makes the charge, I will plead "guilty." It is summer, vacation-time, and I am rather pleased to have this little idle while, and the idea of having time to think, idly or otherwise, instead of having to act and quickly, is indeed refreshing. My surroundings are beautiful, peaceful and the temptation is to merely enjoy. Any profound thinking would be irksome; certainly any pessimistic thoughts would be.

Without the slightest trace of pessimism therefore, but merely the resultant thoughts from a little quiet introspect, retrospect, prompted by probably more reading in the last few days than I have had time for in a year prior, suggests the question "What is Architecture today?" The direct cause of that question is a letter I have just received enclosing two clippings from recent issues of the New York Press. One reads:

"They Made Literature."

"The architect—and his still more important colleague, the stone cutter—wrote their ambition into stately piles, their soaring fancy into daring, flying buttresses, their grim humor into grinning gargoyles, their romanticism into flowery cornices and vine-twined pillars. Architecture then was literature writ in marble. But in these latter times the architect is the lackey of wealth. He bends above his drawing board, not for fame, but for gain. What might have remained through the ages the noblest of arts has been prostituted to the aggrandizement of the commercially successful and the hereditarily fortunate. Art? Bah, greed in granite."

The other:

"Architectural Fame."

"Let us be frank in these respects. The modern architect as an uplifter of mankind is a distinct failure. He has reached the point where the best that his marvelous mind can produce is a mere shell for elevator shafts, with offices glued to the sides, of a monstrous mausoleum as the home of a public collection or an abode for Midas. For him the years of Midas, surmounted by the cap and bells. Away with tomyrot as to White's civic value! His memory must rest upon his character as a man, for though he may have been the country's greatest architect, there is not in that distinction enough to lift him above the ranks of a myriad others who wear the livery of the dollar-builders."

Thus comments a daily paper. Think of it! For seemingly aeons of time the public press has paid scant if any attention to architecture, and that little not over-intelligent or discriminating. Even our architectural

press has little to say in the way of wholesome criticism, its critiques are usually fulsome praise where the latter will do the most good. Adverse criticism of the designs or methods of our practitioners, particularly those of our leaders, is painfully infrequent. That press is usually servile and whistles dutifully when the great ones of our craft indicate by the merest nod that it is time to whistle.

Remove healthy criticism, the sharpest goad to our best endeavors and what do you have left? Mediocrity.

The introspect, retrospect and general examination I alluded to at first, not tinged with any pessimism, or indigestion, but just a calm review of what all of us have done these many years, compels the admission, in perfect frankness, that our art today is indeed mediocre. Nay, it is no longer an art. And what have we in its stead. A business? A profession?

Let us examine into the matter. It will not be lost time.

Our civilization and our acquirements are complex, exacting. Ninety-nine hundredths of our enterprises, our businesses, our pleasurable pursuits require a building of some sort or other for their purpose, their most prominent and tangible expression. We are justified, therefore, in classing the art, or whatever it is, of building as one of the most important functions of modern man.

We Americans have achieved high distinction in the performance of some of those functions. Our growth and the pace we have kept in life are amazing; in some lines of commerce, in engineering, in developing natural resources, we have taken a place well in the lead of nations and occupy a relative position that no other people, in any other time, has ever attained. But what have we done in Architecture?

Perfection in that art or business should mean that a building, first and foremost, should accomplish all the purpose for which it is built; that the designer should take advantage, and accentuate, and bring to his assistance all the peculiarities of the site. His building should fully express the purpose for which it is constructed, it should not borrow an expression from some remote and unrelated, perhaps prehistoric structure; it should be indestructibly built, yet not wasteful of its owner's resources; it should be beautiful. Can you, my brother architects, find—outside of your own achievements, of course — more buildings of our eleven million some hundred thousand, than that you can count on the fingers of one hand, that will approach anywhere near the ideal at which we have glanced? And to concede that that is true must certainly be a confession of mediocrity.

Go into almost any building you wish, note the purpose of that structure, see what is being done in it, and you will be pained to find how ill planned it is. I am speaking now of the work of the average, the general run of our professional brethren. The exceptions to that average, the "top notchers," so to speak, may certainly be counted on the fingers of the other hand and we will glance at their work later on. But look at this factory, for instance, it is ill placed upon the ground, no consideration has been given the best points for light and ventilation. To add anything to it you must needs re-study the whole problem; no thought has been given to the future: the operation of the machinery has not been made easy; the construction is costly and the maintenance almost more expensive than needs be; the materials used entail additional useless expenditure; no regard has been had to prevent the spread of fire and you are surprised that an architect could so ill acquit himself of his task. Why is it that a business man, endowed sometimes with more than ordinary intelligence, will confide so many of his interests, so much of his hard-earned capital, into the hands of so incompetent an adviser?

But where would he go for a better one?

Then visit yonder house with me. It is a costly home, resplendent with art glass and all the frivolities, the gew-gaws, of our so-called "domestic architecture." It is a country home, but the plan is that of a city house, its very best exposure is devoted to stairs, lavatories, etc.; its rooms open up most awkwardly; the beautiful open stairs make the spread of fire certain; every time one room is swept you can be sure the entire house is dirtied, and one cannot sneeze on any story without being heard perfectly all over the house; it is so well arranged and built with such materials that you are certain that dropping a match anywhere will result in the complete destruction of the home. But then it resembles Mr. So-and-So's house, and has cost much more money than the surrounding houses, and the sapience of the architect is conceded. The people have gotten what they wanted and they did not want anything better because they didn't know better, architects have not taught them better.

Our average architect has not made the best use of the available advantages of his project. Therefore is he not a startling success as a factor in our economic development.

Perhaps then is he an essentially clever constructor?

We have evolved the "skyscraper," as engineers we have developed a system of steel construction that is daring and does contribute to at least the crowding, if not the solving, of our economic problems; true, too, no other nation has devised the conveniences as perfect heating, ventilating and other mechanical appliances as have we, but in the real science of construction, which presupposes permanency, economy and adaptability, have we progressed one iota beyond what our fathers did, are we not absolute slaves to the precedents established by them? Or, if we do depart from those time-hallowed methods of wooden framing and the other etceteras, are we not carried off our feet by every passing fad? By dint of hard hammering, some of us have come to realize that it really is an advantage to build so that our buildings may not fall a ready prey to flames, and most of us have been pulled hither and thither by pretty nearly everyone with a "system."

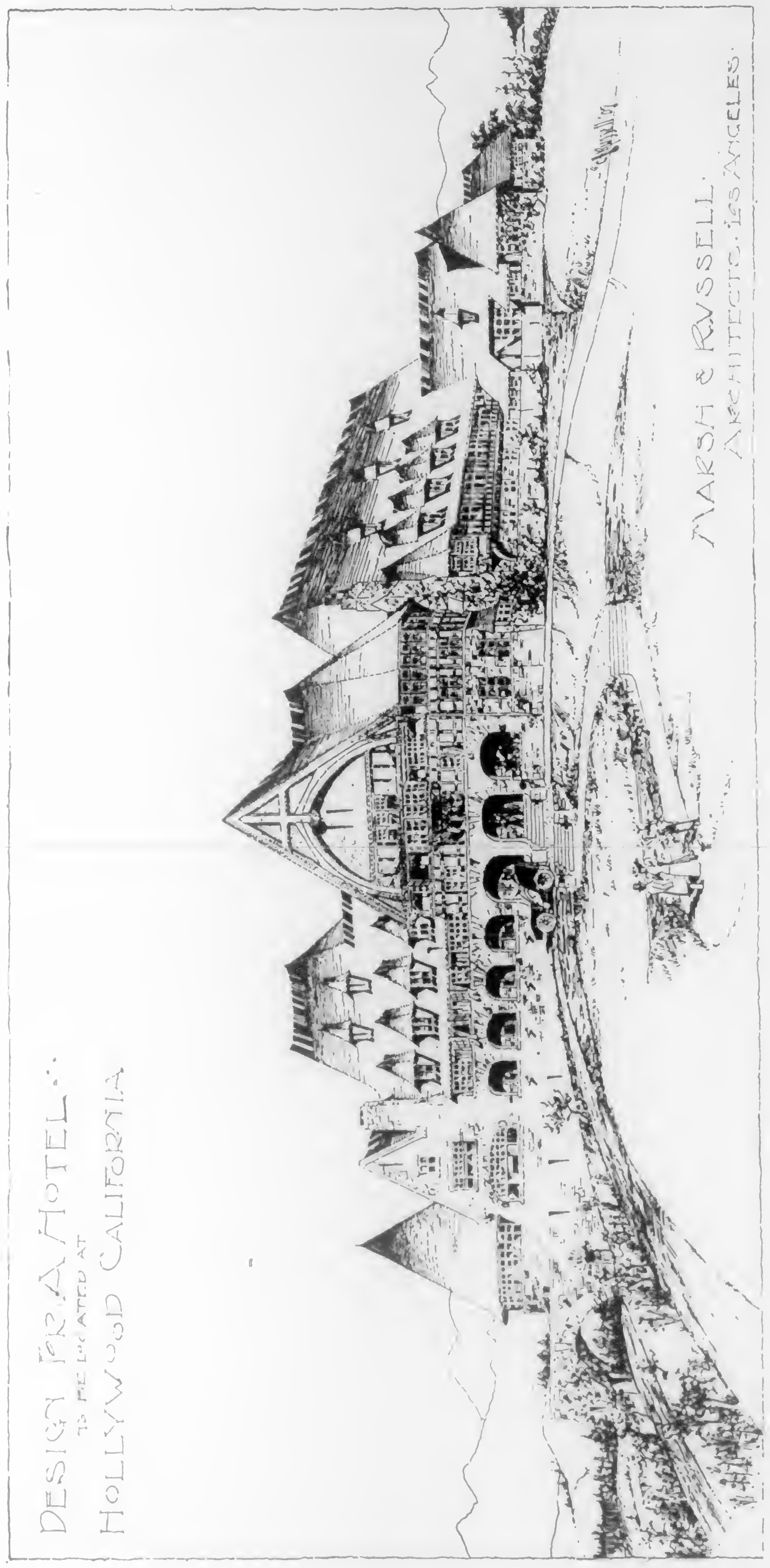
What think you of the man who leaves steelwork exposed in the hope that fire will not affect it, or of the one who leaves reinforced concrete exposed to possible fire, unprotected, a material, however structurally strong it may be initially, and however advantageous it may be to use it structurally, that loses fifty per cent of its efficiency in 750 degrees of heat?

Speaking of intelligence, see what that of the San Francisco brethren assured to their city. They built so well that $315,000,000 of those buildings went up in smoke. The fire entails a loss in business to the city and to the country of at least a billion dollars more. Twelve million dollars will have to be spent to clean away the debris, and $350,000,000 and twenty years time will have to be expended to put the city where it formerly stood in the scale of cities. When we realize how much money was spent in San Francisco in tawdry ornament and useless decoration, we are forced to admit that the San Francisco fire is a severe arraignment of and cause for and commentary upon our knowledge of building.

That fire exposed astounding stupidity; there is almost as much in every other city, only it has not been uncovered—yet.

But perhaps if we are not constructors we are artists?

How can we be such if our buildings do not fully and completely express the purpose for which they were constructed; or, if they are not frank



in design; or if the key is forced, or if we merely copy something that was very beautiful ages ago and that frankly served the purpose of those times, but that is as out of place today, incongruous in our new surroundings, as it would be ridiculous to clothe our Senators in a modern top-hat, purple-bordered toga, knee panties, white spats and Roman sandals?

In how many of our buildings have we not sinned, sinned grievously in one or all of the ways above enumerated?

What are our best New York commercial buildings? Tall shafts purporting to be very substantial masses, granite walls, in reality useless weights of walls, carried, suspended in some cases bird-cage fashion, from the real steel supports. Atop of the shafts are perched Greek temples, becolumned and porticoed and entablatured, all according to Hoyle—or Vignola—and the whole be-carved and decorated most sumptuously, extravagantly. What paucity of expression! Is that Art?

Leaving the average for a moment, what have the great ones of our nation done? Take the best work of McKim, Mead & White, for instance. As a rule it is beautifully executed and the details pleasing, even the masses are attractive if we could but isolate the particular building under consideration, or imagine it in entirely different surroundings. What rhyme or reason is there in abjectly copying, in every dot and dash, a Venetian palace of ancient vintage to do duty in a busy modern metropolis as a newspaper office, or to as painfully copy the baths of Caracalla, or some other sybaritic old Roman, in the most modern of modern buildings, a great railway station? With our limitations it is most natural that we should adapt even ancient forms and details, to be original is almost fatal, but can we not modify those forms, adjust them to our needs, get out of them a semblance of present purposes at least, mix them up a bit, resort to almost any expedient rather than bodily transplantation? Were I in those gentlemen's place, as successful, judged by worldly gauge, and as honest as I would like to be, I declare I would look up the direct heirs of Bramante, Buonarroti, Ictinus of Athens, and even the reputed descendants of the catachrestical Callimachus, in order to divide up with them the commissions derived from the use of their forbears' perhaps copyrighted designs.

Or the Burnham aggregation of talent? Estimable gentlemen, eminently successful, but how artistic? True, their buildings are unusually well planned, constructed rapidly, and probably as well, if not better, than those of any of their confreres. But, artistically, their scheme, while possibly not copies, is painfully the same all over the country. Good, wholesome sort of buildings, their very plainness disarming adverse criticism, but from all the same stock pattern. The First National Bank in Chicago, the Railway Exchange, the Wanamaker's in New York, the Burnham buildings anywhere, I can spot within a mile of them. One of their buildings, however, deserves unstinted praise, to my mind at least, and that is the new railway station in Washington. It, too, is from some one's bath or some antediluvian temple, I forget now just what is its prototype, but there is reason for it. The Capitol is of the classic mold; this new building is a complement to it, part of a general scheme of classic design, really a great gateway to the city, treated monumentally and with monumental surroundings, appropriate, pleasing, eminently suitable. But with the general run of their work, one is always reminded, somehow or other, of yards of paper, a printing press and a pair of scissors.

Perhaps of them all, Sullivan of Chicago approaches the nearest to the ideal handling of our "art" in some respects. His designs are absolutely frank, there is no bluff at false construction, the external walls merely clothe the building, they indicate the way they are carried up and sustained and

make no pretense of doing the sustaining. Then his decoration is applied to salient points and is simply and solely decoration. His ornament, detail, is most successful, really beautiful and, in times gone by, he gave us some very attractive masses, though of late his buildings, in so far as the composition of masses is concerned, are woefully boxy. But he is on the right track and a very considerable school is following him.

There is another school, chiefly youngsters, who attempt to do wonders with the "Nouveau Art" craze. Their efforts are generally puny, are hardly worth notice and so manifestly mere "echoes de Paris" that they defeat the very purpose for which that art was originated.

And still others who ape the mannerisms, the very faults of the lordly Richardson—long since gathered to his fathers; peace to his ashes—and affect to ignore utilities, the very prime purpose of a building, and live merely to "design" pleasing exteriors, that seldom if ever fit either the surroundings or the buildings they enclose. He, the master, had really a most attractive disregard for everything save design, forgetting that the latter is but a part of a whole and not the one and only thing. If a window would look well in a certain place outside Richardson would put it there, if you had to climb up a step-ladder to look out of it, or if you had to make a room three feet wider than you intended in order to get that window in, why, that was your fault. If he thought that another building would look well with a moat in front of it, he would put the moat there, on that twenty-five foot lot, and slam your building back far enough to accommodate that moat; that other people carried their buildings 'way in front of you was your affair, you should have bought up all the adjacent property. He had his moat in that design, and we have a lot of apelings trying to follow in his steps.

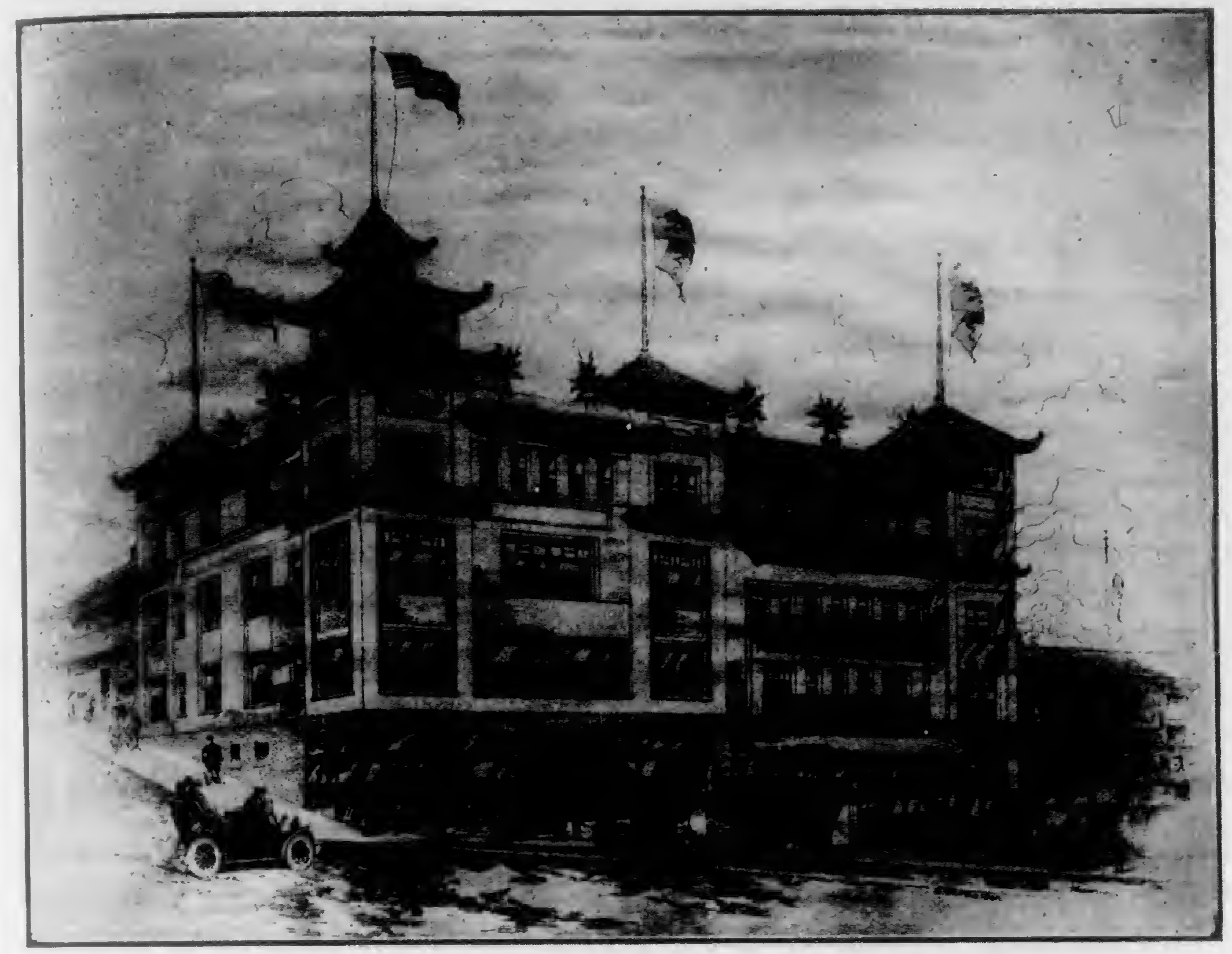
We have also had those enthusiastic but misguided souls who have striven to establish an American style, but they are in heaven.

No, as artists, in the fullest sense of the term, we are not distinct successes.

But perhaps the art or the profession or whatever it used to be has developed into a business. What success have we made of it in that line? Some of us have married well or else secured railroad and bank presidents as blood relatives; some of us have assiduously cultivated the social set, and others of us have dallied in real estate or otherwise turned a handsome penny, for there are some of us who are wealthy. But taken as a class, the craft is ill paid, most of it is soured and embittered by lack of success. The most insignificant layman who has an unimportant building to erect will get us to compete and otherwise demean ourselves like a lot of peanut venders. In how much respect is the craft held? The average man speaks of a lawyer or a doctor as of Somebody to be consulted, to be deferred to; the architect he expects to find respectfully awaiting him at his back door—and he usually does find him there. The big building companies control the heavier construction absolutely; the retaining of an architect has become a mere farce and his duties are perfunctory. In but a little while these companies will go a step farther and employ their own "designers." The architect used to be a sort of monarch of all he surveyed upon a building, as sacred his authority as a captain's on his ship. Today he is glad to draw his five per cent or oftener his three per cent and to respectfully suggest this or that change on a building to the under-officers of the great construction companies.

As a business we have not made a notable success.

What are we, whither are we tending? We know whence we came. We are of an ancient and honorable guild, that once held its head high among its peers, that was respected, esteemed, that counted really great



Sing Chong Building, Chinatown, San Francisco
A. W. Burgren, Engineer *Equipped with Otis Elevators* *T. Patterson Ross, Architect*

artists and great constructors on its rolls. But that is of the past. The question before us is as to the future. An interesting subject to think upon, anent which to speculate, but hardly fit for one to write about in idle minutes. Retrospect and introspect are well enough, and (though you may think these tainted with pessimism) pleasing, too, but when it comes to prophesy as well as the pointing out of the dangers, ah, that is another matter.

Dwelling upon our artistic sins, our subservience to dollars, our everlasting copying tendencies, I am reminded of Wallace Irwin's clever skit on the Clark mansion in New York. There is a wealth of truth in his catchy, rollicking rhymes, and let us use them as our peroration. To quote even a peroration is certainly the privilege of an idle fellow:

"Senator Copper of Tonopah Ditch
Made a clean billion in minin' and sich,
Hiked for Noo York, where his money he blew
Buildin' a palace on Fift' Avenoo.
'How,' sez the Senator, 'can I look proudest?
Build me a house that'll holler the loudest—
None o' yer slab-sided, plain mausoleums—
Give me the treasures of art and museums;
  Build it new fangled,
  Scalloped and angled,
Fine, like a weddin' cake garnished with pills;
  Gents, do your dooty—
  Trot out yer beauty,
Give me my money's worth—I'll pay the bills.'

"Forty-eight architects came to consult,
Drawin' up plans for a splendid result;
If the old Senator wanted to pay,
They'd give 'im art with a capital A.
Every style from the Greeks to the Hindoos,
Dago front porches and Siamese windows,
Japanese cupolas fightin' with Russian,
Walls Senegambian, Turkish and Prussian;
Pillars Ionic,
Eaves Babylonic,
Doors cut in scallops, resemblin' a shell;
Roof wuz Egyptian,
Gables caniptian,
Whole grand effect, when completed, wuz—hell!

"When them there architects finished in style,
Forty-nine sculptors waltzed into the pile,
Swingin' their chisels in circles and lines,
Carvin' the stonework in fancy designs;
Some favored animals—tigers and snakes;
Some favored cookery—doughnuts and cakes,
Till the whole mansion wuz crusted with orn'ments,
Cellar to garret with hammam adornments—
Lettuce and onions,
Cupids and bunions,
Fowls o' the air and the fish o' the deep,
Mermaids and dragons,
Horses and wagons—
Isn't no wonder the neighbors can't sleep!

"Senator Copper, with pard'nable pride,
Showed the grand house where he planned to abide:
Full of emotion, he scarcely could speak;
'Can't find its like in Noo York—it's uneek;
See the variety, size and alignment,
Showin' the owner has wealth and refinement,
Showin' he's one o' the tonier classes—
Who can help seein' my house when he passes?
Windows that stare at you,
Statoos that swear at you,
Steeples and weather-vanes pointin' aloof;
Nuthin' can beat it—
Just to complete it
Guess I'll stick gold-leaf all over the roof.' "

* * *

Keep Him

If you have a man in your employ that is a little slow—slower than you like—but he does his work well, is always looking after your interests, doing his work methodically, picking up and caring for little things, careful that his time is occupied in your service, does not object if he works a little over time, if any emergency arises, in fact approves of it—never grumbles at his task, but does it with care, whatever is set apart to him—never encourages the insubordination of others, but rather discourages it, keep him. You might get a better man, but ten to one you will get a worse one when all the little things are taken into account.—Clayworker.

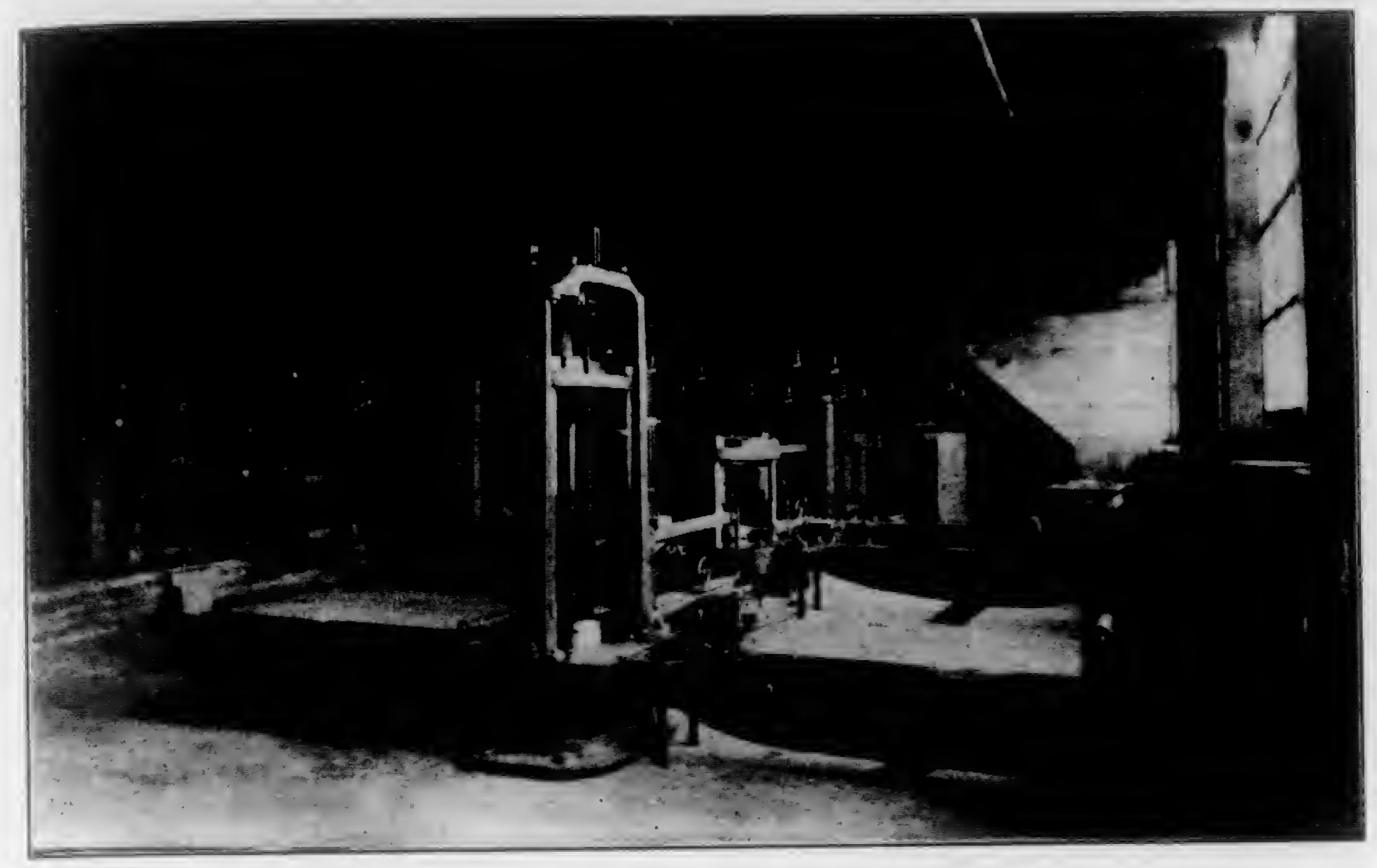


Fig. 1. Three Concrete-Beam Testing Machines

Investigations of Structural Materials by the United States Geological Survey

By RICHARD S. HUMPHREY,

Engineer in charge of the Structural Materials Division
United States Geological Survey

WITH the problems arising from the growing scarcity and consequent increase in the price of wood, principally lumber used in building construction, the search for a desirable substitute becomes a matter of prime importance and justifies the work now being done by the United States Geological Survey at its structural materials testing laboratories at St. Louis.

The increased use of concrete in many forms during the past few years, especially for building purposes, has created a great demand for information regarding the structural value of this material. For a number of years limited investigations designed to obtain this information have been carried on by a number of investigators throughout the country, but no serious attempt at co-operation in this work had been made until a few years ago, when the United States Geological Survey, recognizing the need of information and co-operation, procured a small appropriation for making tests of structural material and invited various technical societies to take part in the work.

A committee called the Joint Committee on Concrete and Reinforced Concrete was invited to assist in outlining the work at the laboratories. This committee is composed of members of the American Society of Civil Engineers, the American Society for Testing Materials, the American Railway Engineering and Maintenance of Way Association and the Association of American Portland Cement Manufacturers. The leading professors of engineering from almost all of the large colleges in the country are members of this committee, and they exercise general supervision over the work.

An Advisory Board composed of leading engineers throughout the country was at once created and has had general supervision of the work.

Tests are being carried on to determine the value of different sands, stones, and other materials used in the manufacture of concrete. The material is shipped from all parts of the country by geologists connected with the work and a complete record of the material is sent in by them. At the laboratories this material is made into mortar and concrete by using the different percentages ordinarily employed in practical work and following as closely as possible practical conditions.

In addition to the study of the constituent materials of mortars and concretes, structures of various kinds similar to those used in buildings are made and tested.

The equipment of the laboratories at St. Louis for carrying on this work is very complete. In addition to all needed smaller apparatus there are four testing machines of 200,000 pound capacity and one of 100,000 pound capacity, suitable for testing beams and other structures used in buildings. These machines will test beams up to twenty feet in length and are equipped to make tests of the different materials used in construction work. Three of these machines used in the beam division are shown in Fig. 1.

In addition to the above machines a very large machine, having a working capacity of 600,000 pounds, will in a few weeks be installed at the laboratories at St. Louis. As far as known at this time there is only one other machine in the United States similar to this. This machine will make it possible to test columns, beams, and in fact all the different kinds of construction material now used. It will test very large reinforced concrete girders up to spans thirty feet in length and concrete columns up to thirty feet in length.

The value of such tests as these is readily apparent, since their results can be applied directly to practical work. A very serious objection to the use of results obtained in tests made by private investigators is due to the fact that the tests were applied only to small specimens not nearly approaching in size the parts or pieces used in actual construction. Heretofore it has been necessary to consult the results of these small tests in order to have some basis for design, but it is now clearly recognized that the best results can be obtained only from tests made on members as large as possible, or at least on pieces as large as those ordinarily used in structural work.

All the concrete used at the laboratories is mixed in three Chicago cube concrete mixers, each of which is mounted on skids, geared to a motor and equipped with charging hopper. One of these mixers has a capacity of one cubic yard and the others will contain one-third cubic yard each. After the concrete is mixed it is carefully tamped in molds to form the different pieces on which the tests are made, such as cylinders, cubes, and beams.

The laboratory also uses five hollow concrete block machines, used for making concrete blocks similar to those used in actual construction, and the several different divisions,—the constituent materials division, the beam division, the concrete block division, the permeability, the shear and tension and the chemical division are equipped with all apparatus necessary for conducting their tests.

Although reinforced concrete is used to a remarkable extent at the present time, and both concrete and reinforced concrete construction is becoming more and more popular every day, it is evident to anyone familiar with construction work that these materials will be more generally employed within the next few years. Many engineers are prejudiced against the use of concrete and reinforced concrete, but this prejudice is rapidly

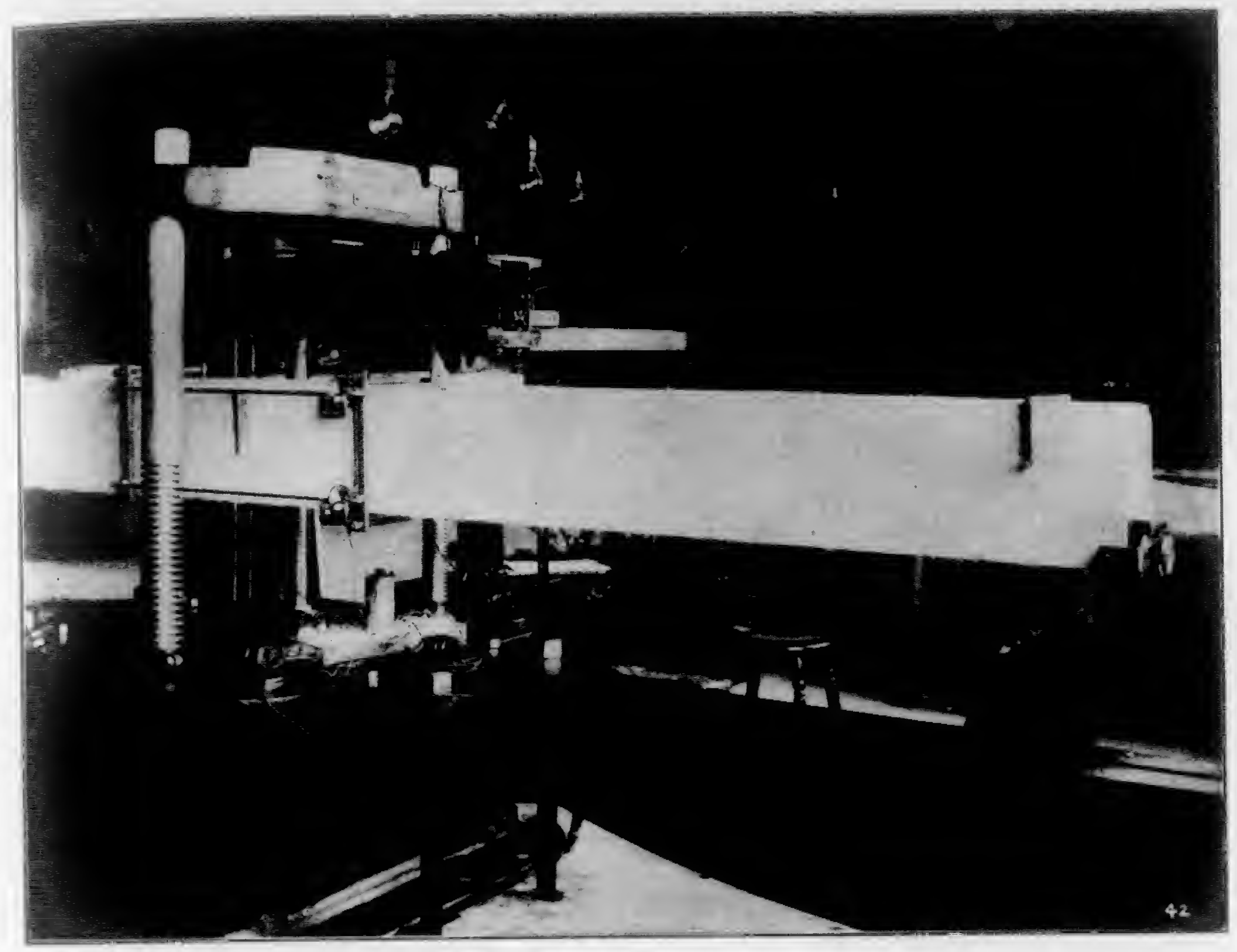


Fig. 2. Testing a Thirty-Foot Concrete Beam

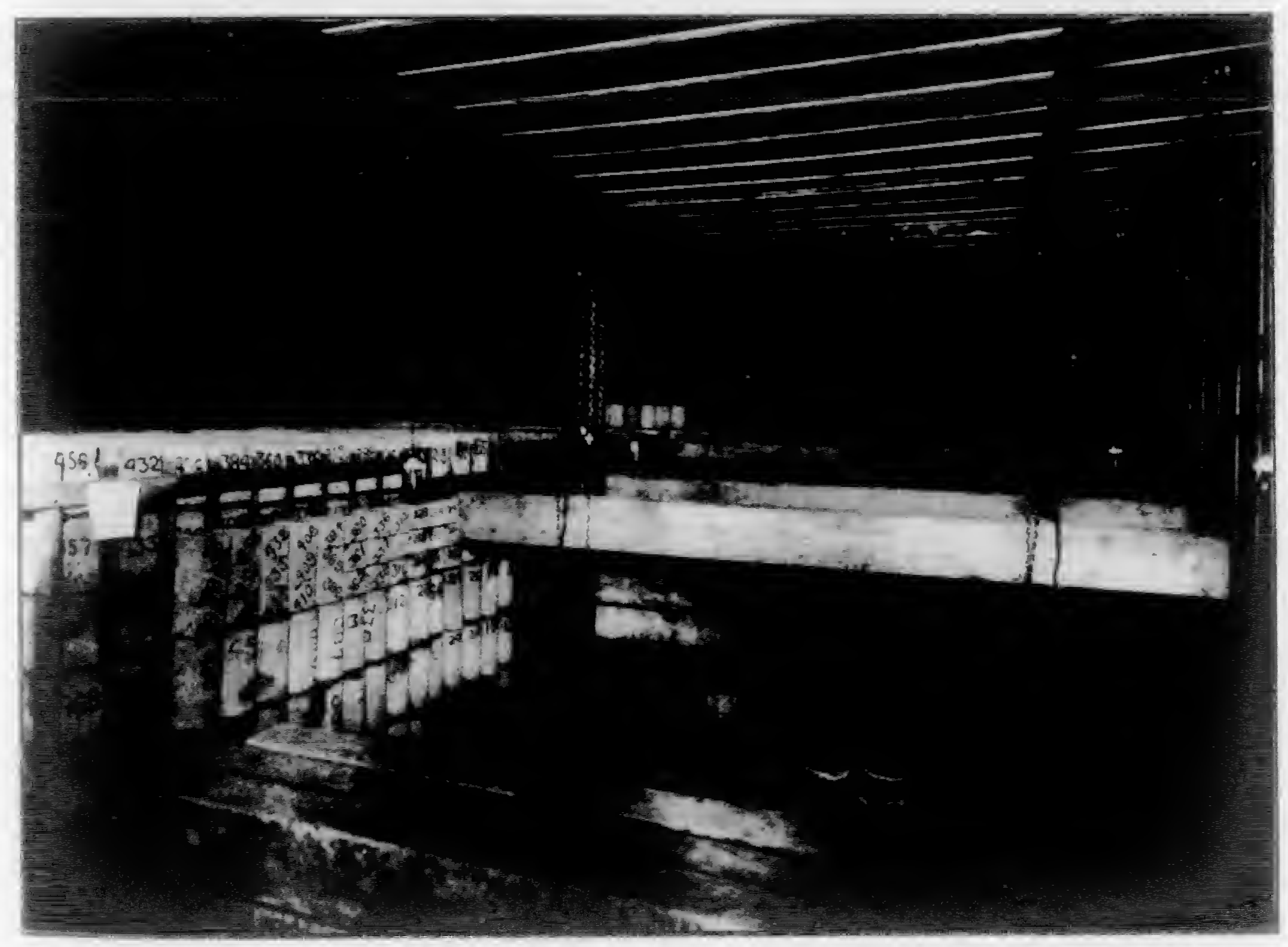


Fig. 3. Room in Which Concrete Beams are stored

An Advisory Board composed of leading engineers throughout the country was at once created and has had general supervision of the work.

Tests are being carried on to determine the value of different sands, stones, and other materials used in the manufacture of concrete. The material is shipped from all parts of the country by geologists connected with the work and a complete record of the material is sent in by them. At the laboratories this material is made into mortar and concrete by using the different percentages ordinarily employed in practical work and following as closely as possible practical conditions.

In addition to the study of the constituent materials of mortars and concretes, structures of various kinds similar to those used in buildings are made and tested.

The equipment of the laboratories at St. Louis for carrying on this work is very complete. In addition to all needed smaller apparatus there are four testing machines of 200,000 pound capacity and one of 100,000 pound capacity, suitable for testing beams and other structures used in buildings. These machines will test beams up to twenty feet in length and are equipped to make tests of the different materials used in construction work. Three of these machines used in the beam division are shown in Fig. 1.

In addition to the above machines a very large machine, having a working capacity of 600,000 pounds, will in a few weeks be installed at the laboratories at St. Louis. As far as known at this time there is only one other machine in the United States similar to this. This machine will make it possible to test columns, beams, and in fact all the different kinds of construction material now used. It will test very large reinforced concrete girders up to spans thirty feet in length and concrete columns up to thirty feet in length.

The value of such tests as these is readily apparent, since their results can be applied directly to practical work. A very serious objection to the use of results obtained in tests made by private investigators is due to the fact that the tests were applied only to small specimens not nearly approaching in size the parts or pieces used in actual construction. Heretofore it has been necessary to consult the results of these small tests in order to have some basis for design, but it is now clearly recognized that the best results can be obtained only from tests made on members as large as possible, or at least on pieces as large as those ordinarily used in structural work.

All the concrete used at the laboratories is mixed in three Chicago cube concrete mixers, each of which is mounted on skids, geared to a motor and equipped with charging hopper. One of these mixers has a capacity of one cubic yard and the others will contain one-third cubic yard each. After the concrete is mixed it is carefully tamped in molds to form the different pieces on which the tests are made, such as cylinders, cubes, and beams.

The laboratory also uses five hollow concrete block machines, used for making concrete blocks similar to those used in actual construction, and the several different divisions,—the constituent materials division, the beam division, the concrete block division, the permeability, the shear and tension and the chemical division are equipped with all apparatus necessary for conducting their tests.

Although reinforced concrete is used to a remarkable extent at the present time, and both concrete and reinforced concrete construction is becoming more and more popular every day, it is evident to anyone familiar with construction work that these materials will be more generally employed within the next few years. Many engineers are prejudiced against the use of concrete and reinforced concrete, but this prejudice is rapidly

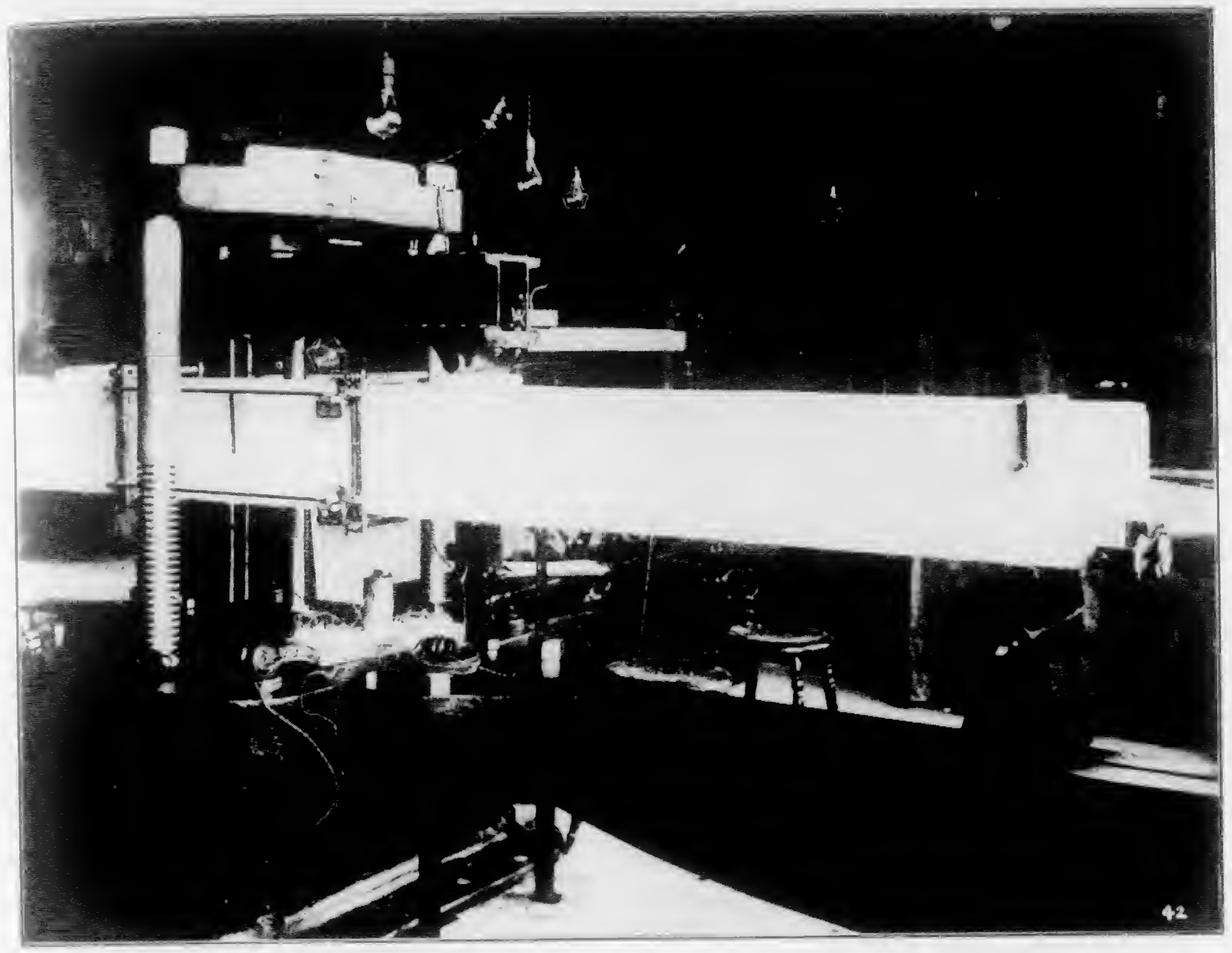


Fig. 2. Testing a Thirty-Foot Concrete Beam

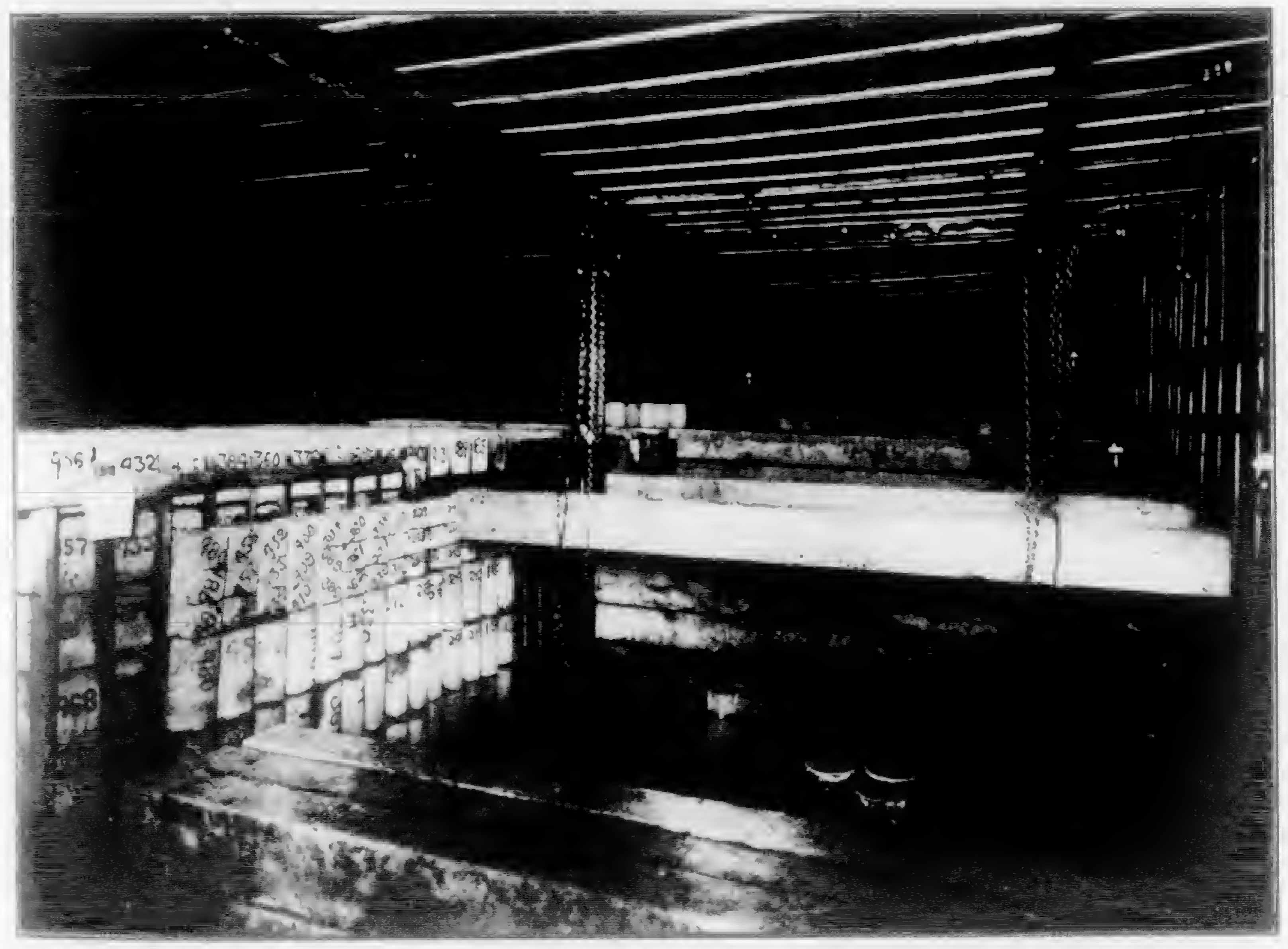


Fig. 3. Room in Which Concrete Beams are stored

being removed by the obtainment and publication of reliable data regarding this material. Without doubt, in a very few years, when most of the principles underlying the use of concrete and reinforced concrete have been fully established from tests and investigations, there will be little prejudice against the use of concrete; the present prejudice evidently being due to lack of information.

The longest beam thus far tested in the beam division has been thirteen feet in length. Beams of this length tested are made without steel, that is, of solid concrete beams, and also with varying proportions of steel, ranging from very small percentages up to three per cent. A full size beam in the testing machine is shown in Fig. 2; the load is applied at the top of the beam at points four feet from each end. The men conducting the tests watch the beam very closely while it is in the testing machine, and examine its surfaces with magnifying glasses in order to locate the fine cracks as they appear. In the beginning a load of about 5,000 pounds is applied and the machine is stopped with this load on the beam. After the observers have examined the beam carefully and made a record of the cracks appearing at that time, the load is increased, and after every 1,000 pounds additional the beam is again examined until the maximum load is applied.

In a very large number of tests the beam shows no cracks that are visible to the eye until the maximum load is reached, when the steel reaches its elastic limit and begins to stretch fast, this result ending the test. The cracks that appear on the beam and the loads at which these cracks appeared are recorded by photographs.

In beginning tests of reinforced concrete simple round rods were used, as it was thought that more uniform results could thus be had than if any of the patented systems were used. After a complete series of tests with the round rods has been made, it is proposed to take up tests of the different forms of bars that are used in practical work, and the results will be published from time to time by the Geological Survey. Tests will be made of beams ranging from six to twelve feet in length, and because of longer span will be tested later, if necessary, in order to get results that can be applied to almost all practical conditions.

The concrete used in the different beams tested, as described above, is molded into cylinders and cubes, which are tested in order to get the direct strength of the concrete. These cylinders and cubes are all tested at different ages, generally at ages of 7, 28, 90, 180 and 360 days. The cement, sand, stone, gravel, or other material composing the concrete is carefully proportioned by weight, the correct percentage of water is used and the whole mass is placed in the mixer and thoroughly mixed. It is then deposited very carefully in molds or forms which after twenty-four hours are removed. The concrete is then moved into a storage room, shown in Fig. 3, and is there sprinkled with water three times each day. Each test piece is numbered on a card index, which tells where information relating to the test pieces can be found and also indicates the dates on which the different pieces are to be tested.

A branch of the work that should be of interest to everybody, especially the small home-builder, is the investigation of cement building blocks. Many houses are now built of cement blocks in preference to wood, because generally cement block construction is cheaper and better than wood, since it is fireproof, more durable and less expensive to maintain. The exterior surfaces of wooden buildings must be painted, and clap-boards must be added from time to time; but when the cement block building is finished, the surface is there once for all; no further treatment, no repairs, no maintenance are necessary.

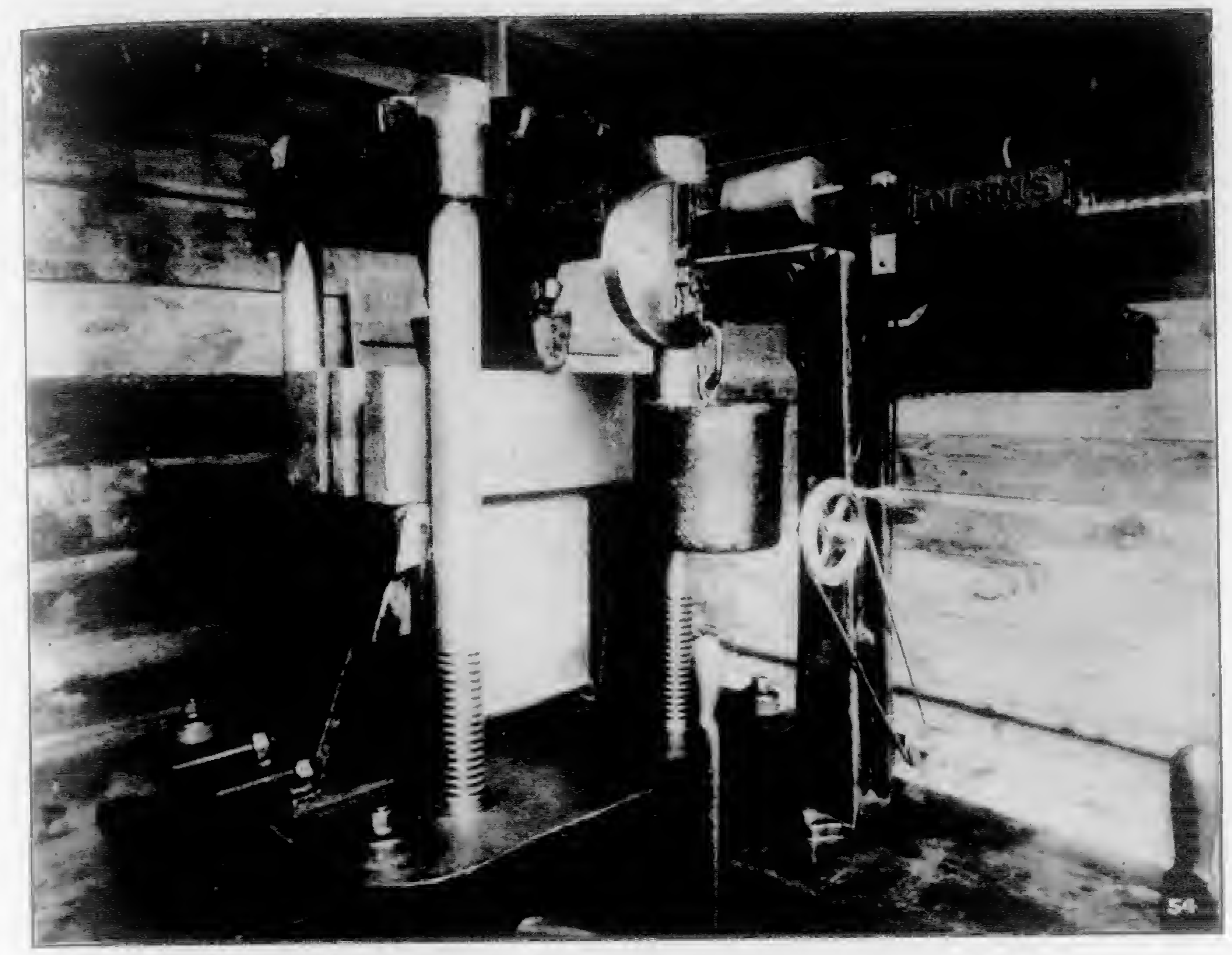


Fig. 4. Testing Concrete Blocks



Fig. 5. Testing Fireproofing Qualities of Concrete

being removed by the obtainment and publication of reliable data regarding this material. Without doubt, in a very few years, when most of the principles underlying the use of concrete and reinforced concrete have been fully established from tests and investigations, there will be little prejudice against the use of concrete; the present prejudice evidently being due to lack of information.

The longest beam thus far tested in the beam division has been thirteen feet in length. Beams of this length tested are made without steel, that is, of solid concrete beams, and also with varying proportions of steel, ranging from very small percentages up to three per cent. A full size beam in the testing machine is shown in Fig. 2; the load is applied at the top of the beam at points four feet from each end. The men conducting the tests watch the beam very closely while it is in the testing machine, and examine its surfaces with magnifying glasses in order to locate the fine cracks as they appear. In the beginning a load of about 5,000 pounds is applied and the machine is stopped with this load on the beam. After the observers have examined the beam carefully and made a record of the cracks appearing at that time, the load is increased, and after every 1,000 pounds additional the beam is again examined until the maximum load is applied.

In a very large number of tests the beam shows no cracks that are visible to the eye until the maximum load is reached, when the steel reaches its elastic limit and begins to stretch fast, this result ending the test. The cracks that appear on the beam and the loads at which these cracks appeared are recorded by photographs.

In beginning tests of reinforced concrete simple round rods were used, as it was thought that more uniform results could thus be had than if any of the patented systems were used. After a complete series of tests with the round rods has been made, it is proposed to take up tests of the different forms of bars that are used in practical work, and the results will be published from time to time by the Geological Survey. Tests will be made of beams ranging from six to twelve feet in length, and because of longer span will be tested later, if necessary, in order to get results that can be applied to almost all practical conditions.

The concrete used in the different beams tested, as described above, is molded into cylinders and cubes, which are tested in order to get the direct strength of the concrete. These cylinders and cubes are all tested at different ages, generally at ages of 7, 28, 90, 180 and 360 days. The cement, sand, stone, gravel, or other material composing the concrete is carefully proportioned by weight, the correct percentage of water is used and the whole mass is placed in the mixer and thoroughly mixed. It is then deposited very carefully in molds or forms which after twenty-four hours are removed. The concrete is then moved into a storage room, shown in Fig. 3, and is there sprinkled with water three times each day. Each test piece is numbered on a card index, which tells where information relating to the test pieces can be found and also indicates the dates on which the different pieces are to be tested.

A branch of the work that should be of interest to everybody, especially the small home-builder, is the investigation of cement building blocks. Many houses are now built of cement blocks in preference to wood, because generally cement block construction is cheaper and better than wood, since it is fireproof, more durable and less expensive to maintain. The exterior surfaces of wooden buildings must be painted, and clap-boards must be added from time to time; but when the cement block building is finished, the surface is there once for all; no further treatment, no repairs, no maintenance are necessary.

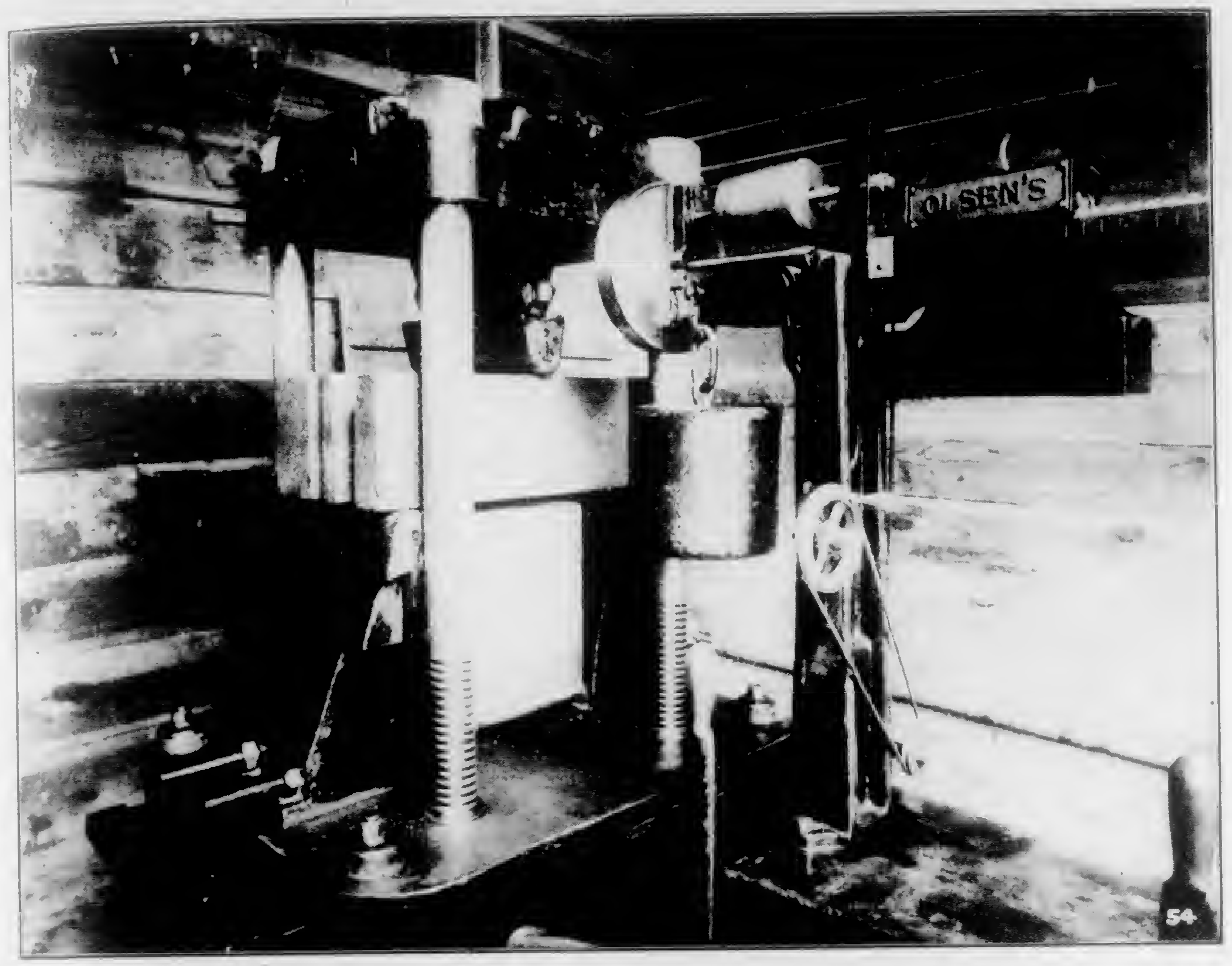


Fig. 4. Testing Concrete Blocks



Fig. 5. Testing Fireproofing Qualities of Concrete

All the cement blocks used in these investigations are mixed in the concrete block machines. The concrete is mixed in a one-third cubic yard cubical concrete mixer and deposited on the floor of the testing room. It is then shoveled into the hollow block machines and compacted very firmly in the forms. Varying proportions of concrete, sand and stone are used in order to determine the relative value and economy of using different mixtures. Some blocks are made of wet concrete, others of concrete very dry, and still others of concrete having a consistency medium between wet and dry. In actual practice, concrete blocks made from comparatively dry concrete is usually preferred by the manufacturers, for these blocks harden quickly and the forms may be removed almost as soon as all the concrete is placed in the machine. By this practice it is possible to use the same machine for making a large number of blocks each day, whereas when wet concrete is used, the blocks must remain in the machine for a much longer time before they can be removed. When the concrete blocks are removed from the forms they are placed in the storage room and tested at different ages. The storage room used for concrete blocks is similar to that shown in Fig. 3. Cylinders are also made from the same concrete that is used in the blocks, and the results of tests of the cylinders and of the blocks establishes a relation between the strength of the concrete in the cylinder and that of the concrete in the block.

When the blocks and cylinders are placed in the storage room, each test piece is numbered and its number is filed away on a card in a card index. Each card bears the date on which the test piece is to be tested and the cards are filed in chronological order. This brings the current date at the front of the drawer each morning, when cards bearing the same date are taken out and the pieces are taken from the storage room and tested. The results are compiled on forms and later published in reports issued by the Geological Survey.

Concrete blocks are tested at the laboratories in two different ways; first as shown in Fig. 4, to see how much of a center load each block will stand. Although blocks are not actually subjected to a load of this kind in practice, the results of this test make it possible to compare the relative values of different building blocks. Second, after the block has been broken at the center by this load, each half is placed in the testing machine and crushed, in order to find the crushing strength of the block. The results of this crushing test show how much pressure similar cement blocks will stand when used in actual building construction.

The results of the great fires at San Francisco and at Baltimore demonstrated very clearly the fact that modern buildings are not so nearly fireproof as they should be and as they can be made. The lack of fireproofing in the past has been due somewhat to the reluctance of owners to add a small percentage to the cost of their buildings by properly fireproofing them. The failure to employ fireproof construction more generally, however, was due in part to the fact that proper information was lacking, and many engineers, architects, and owners who tried to make their buildings fireproof used all the information at their command at the time of building.

The art of fireproofing has been developed rapidly within the last few years, but there is still much to be done, especially in relation to the fire-resisting properties of concrete. In order to obtain information to meet these needs a series of fire tests are being carried on by the Geological Survey at the Fire Underwriters' Laboratory at Chicago.

For this purpose a hanging door having a steel frame and a one-foot wall of fire brick inside of it is used. At the center of this frame there is an arched opening of about the size of an ordinary door. For the fire tests this opening is built up successively with different materials, ordinary building brick, fire brick, hollow tile blocks, the different kinds of cement building blocks, stone, concrete and terra cotta. When the opening is filled with cement blocks, it has the appearance shown in Fig. 6. After the opening is filled, a flaming gas jet is played all over the door for a long time and when the heated surface is very hot, the gas is turned off and the door allowed to cool. In some tests the cooling takes place slowly, in others a stream of water is played on the door immediately after the gas is turned off in order to reproduce as nearly as possible the actual conditions in a fire.

When these tests are completed the results will not only show engineers and architects what material is best for fireproofing and how much should be used to produce the best results, but will also teach the small builder, the builder of a home, what kind of a cement block is best adapted to make his house fireproof.

It is the consensus of opinion among engineers that a reasonably fireproof building can be constructed, and it is hoped that the art of fireproofing will be so developed in the next few years that the public will also be convinced that this is true. It is also desirable that the public should be thoroughly informed as to the fire-resisting qualities of the various classes of building materials and it is expected that the work being done by the United States Geological Survey will furnish reliable information not only on this subject, but also in regard to the strength and other properties of these materials.

* * *

The Artistic Temperament

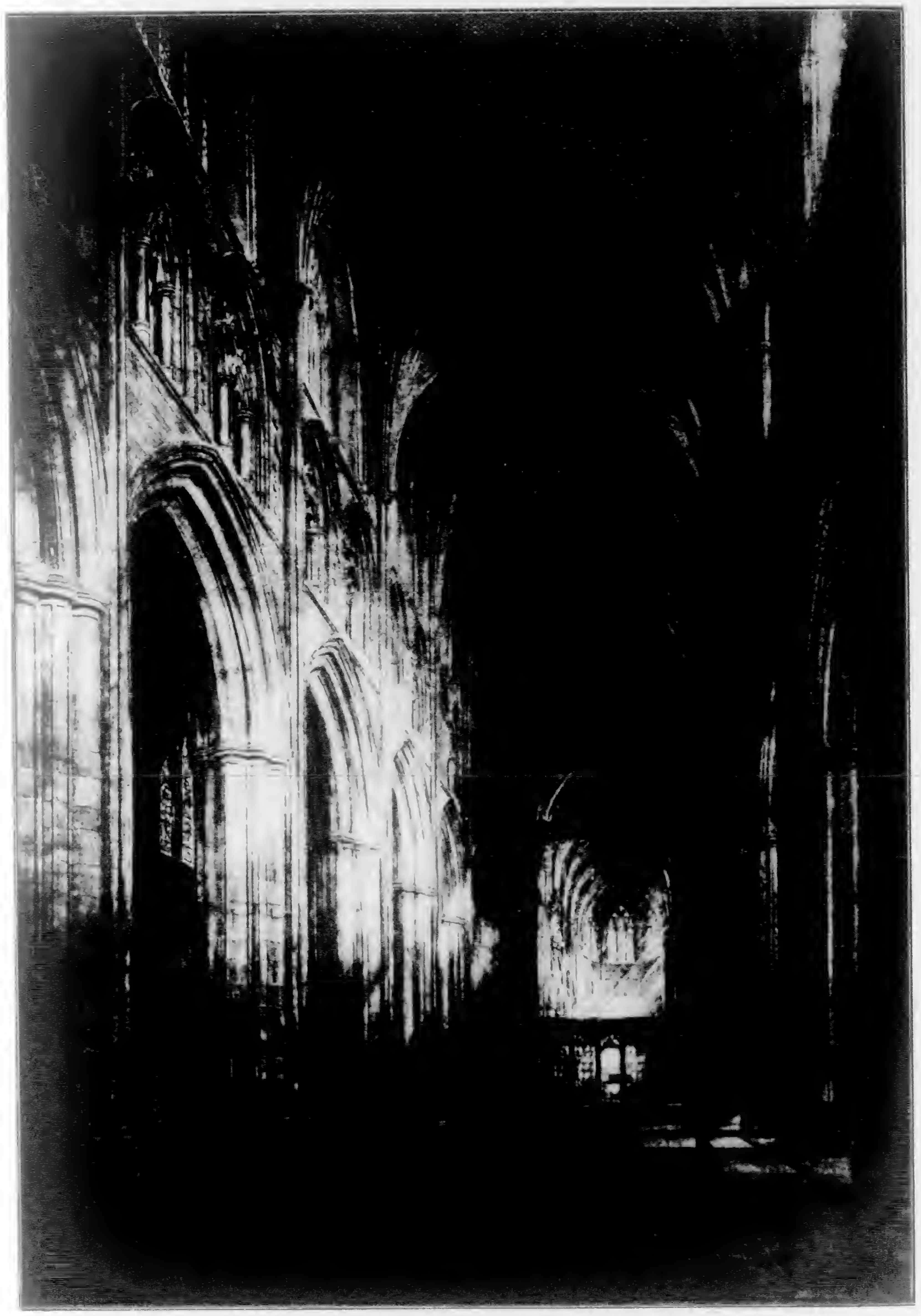
THE last few years there has been out-cropping here and there some mention of the fact that the people are growing more artistic in their ideas. This not only applies in the building of homes, a subject which has been covered before, but of late with the more frequent mention of this influence and the general awakening and prevalence of the artistic temperament, we find that it is not only individuals that are influenced, but all up the line to government doings, and even the hearts of the railroad men are touched.

In writing of colors in brick work in New York, a correspondent says that it is interesting to note the change in taste during the past twenty years in the color of brick used in construction work.

Formerly most of the brick used was of a dark, sombre color and the only relief offered in the way of lightening the effect was a little stone trimming here and there. Now, however, this is all changed and is not only lightened up by the use of more brightly colored brick, but also by the general development of the artistic taste of design as well as color, and the effect is very pleasing.

Among the late, and perhaps the most striking converts to the artistic temperament are the railroad managers who are now giving attention to beauty and pleasing effects in bridge designing as well as durability, and if it reaches the hearts of the railroad managers it is easy to see that the spread is thorough and must include practically all men of affairs in the world.

Another decade will undoubtedly bring some great changes in building operations, including everything from a fence to a mansion. And it is a good sign, and one of those signs of the times which shows that we are learning how to stand prosperity.—Clayworker.



Design for the New Cathedral, Washington, D. C.
G. F. Bodley and H. Vaughan, Architects

The New Cathedral, Washington, D. C.

IN VIEW of the several churches and cathedrals that are to be built in San Francisco in the near future, Bishop Satterles of Washington, D. C., has requested the Architect and Engineer of California to print a description of the proposed Washington cathedral, believing that some of the many fine features of that edifice may prove of value to the San Francisco architects. The Washington edifice was designed by G. F. Bodley, R. A., F. S. A., of London, and H. Vaughan, architect, of Boston.

In style the building is "Gothic" of the fourteenth century—a style of architecture, as we think, the most beautiful that the world has ever seen. In its dimensions it will be larger than most of the cathedrals in England, or on the continent. The total length is 476 feet, and the total width 132 feet. These are the external dimensions. The height to the ridge line of the roof is 130 feet; while to the internal apex of the vaulting it is 93 feet.

The central tower will rise 220 feet from the ground. The plan is that of nave and aisles, transepts, choir, and two chapels. Double aisles are planned for the nave. These latter will be especially useful for monuments and memorial windows and tablets. The choir terminates in an aspidal sanctuary. The building will be vaulted in stone throughout. In their official report the architects say:

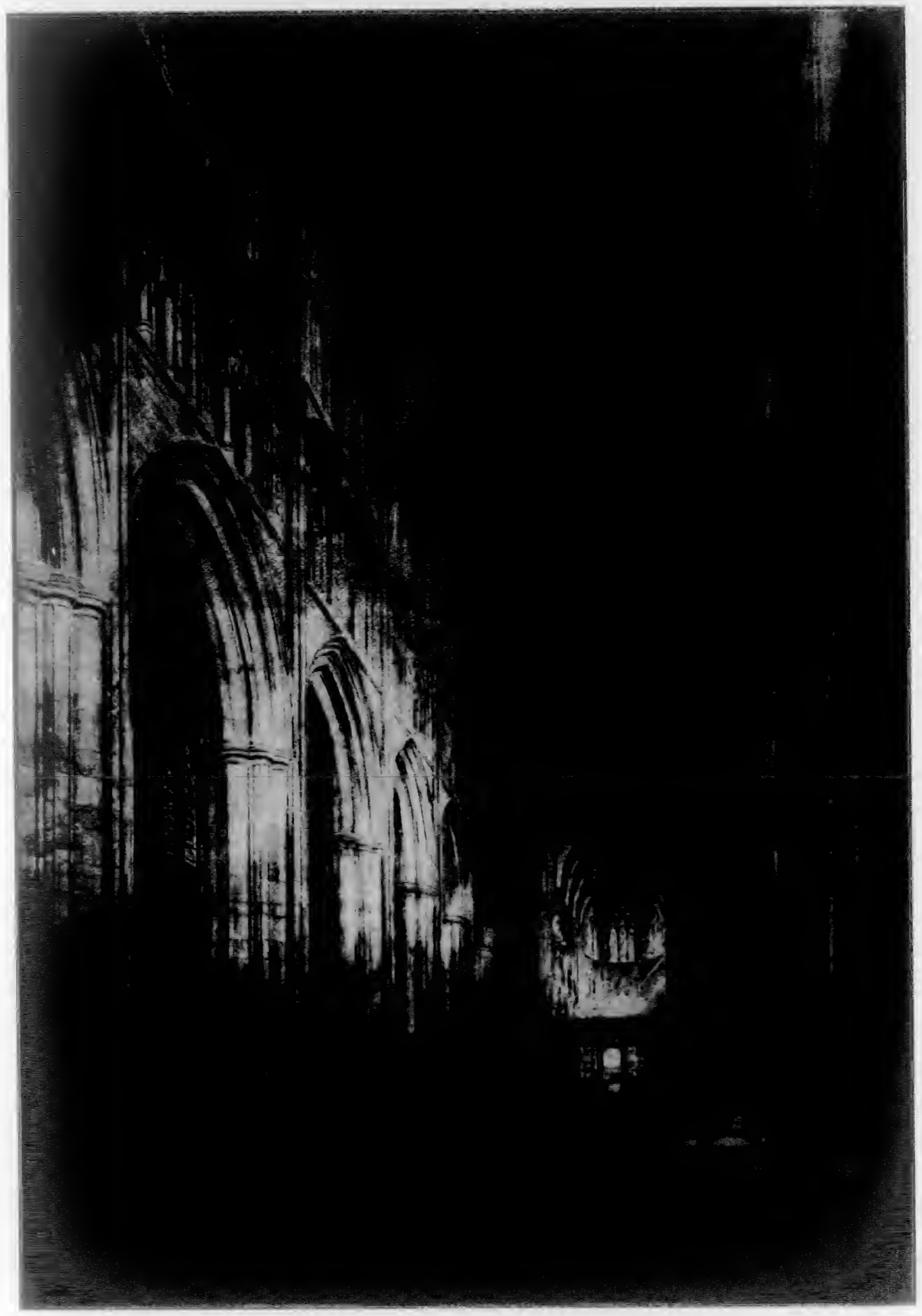
"The lighting of the interior is destined to have a fine effect, being lit by ample Clerestory windows. The light, thus coming from so high a level, will be striking and uplifting. There are lower windows in the aisles; but they are quite subordinate. Then there will be a striking effect of light in the "sanctuary," or eastern part of the choir. For there is to be a large window both on the north and south sides, coming lower down, but much out of sight, being in the depth of thick walls. The windows will be 65 feet long. Light will be given by them to the apse, in an especial and striking manner. It is for this important effect of light that we propose to have no chapel at the far eastern end, in the more usual position when a choir-aisle runs round the east end.

"This plan has the advantage, too, of giving an interior of which the whole length is seen on entering at the west end; thus adding to the perspective, and to the impressive effect of the building.

"There are two chapels at the ends of the choir-aisles. The eye will be attracted down the "long-drawn aisles" to these chapels. There should be no windows at the end of these two aisles, for light there would take the eye and have a disturbing effect. The apse, with the effect of light there that we have spoken of, should be the leading and the impressive feature. The two long windows will not be seen until one gets opposite to them, while their effect of light-giving, as we have said, will be exceedingly good. The exterior of the apse, unhidden by a further building, will be commanding in its lofty proportion, and will make a very conspicuous landmark eastward, crowning the hill with its cluster of many pinnacles.

"The chapels at the ends of the aisles would be used for people during choir services, and will thus afford accommodation. An isolated lady chapel would be a place per se and not useful for those attending the services conducted in the choir, nor would it add to the internal effect. It is for these reasons that we have planned the chapels where shown, and no separated lady-chapel. The chapel in the position shown will be bright with its south windows. There will be a gleam of light from it.

"Another feature will be a broad soffit, 9 feet 6 inches wide, forming the eastern arch of the central tower. This deep sweep of soffit, or under side of the arch, will be carved with figures of angels, arranged in a suitable design. It would be, as it were, an angelic canopy over the Rood and will be an effective treatment. It would recall the words, "which things the angels desire to look



Design for the New Cathedral, Washington, D. C.
G. F. Bodley and H. Vaughan, Architects

The New Cathedral, Washington, D. C.

IN VIEW of the several churches and cathedrals that are to be built in San Francisco in the near future, Bishop Satterles of Washington, D. C., has requested the Architect and Engineer of California to print a description of the proposed Washington cathedral, believing that some of the many fine features of that edifice may prove of value to the San Francisco architects. The Washington edifice was designed by G. F. Bodley, R. A., F. S. A., of London, and H. Vaughan, architect, of Boston.

In style the building is "Gothic" of the fourteenth century—a style of architecture, as we think, the most beautiful that the world has ever seen. In its dimensions it will be larger than most of the cathedrals in England, or on the continent. The total length is 476 feet, and the total width 132 feet. These are the external dimensions. The height to the ridge line of the roof is 130 feet; while to the internal apex of the vaulting it is 93 feet.

The central tower will rise 220 feet from the ground. The plan is that of nave and aisles, transepts, choir, and two chapels. Double aisles are planned for the nave. These latter will be especially useful for monuments and memorial windows and tablets. The choir terminates in an aspidal sanctuary. The building will be vaulted in stone throughout. In their official report the architects say:

"The lighting of the interior is destined to have a fine effect, being lit by ample Clerestory windows. The light, thus coming from so high a level, will be striking and uplifting. There are lower windows in the aisles; but they are quite subordinate. Then there will be a striking effect of light in the "sanctuary," or eastern part of the choir. For there is to be a large window both on the north and south sides, coming lower down, but much out of sight, being in the depth of thick walls. The windows will be 65 feet long. Light will be given by them to the apse, in an especial and striking manner. It is for this important effect of light that we propose to have no chapel at the far eastern end, in the more usual position when a choir-aisle runs round the east end.

"This plan has the advantage, too, of giving an interior of which the whole length is seen on entering at the west end; thus adding to the perspective, and to the impressive effect of the building.

"There are two chapels at the ends of the choir-aisles. The eye will be attracted down the "long-drawn aisles" to these chapels. There should be no windows at the end of these two aisles, for light there would take the eye and have a disturbing effect. The apse, with the effect of light there that we have spoken of, should be the leading and the impressive feature. The two long windows will not be seen until one gets opposite to them, while their effect of light-giving, as we have said, will be exceedingly good. The exterior of the apse, unhidden by a further building, will be commanding in its lofty proportion, and will make a very conspicuous landmark eastward, crowning the hill with its cluster of many pinnacles.

"The chapels at the ends of the aisles would be used for people during choir services, and will thus afford accommodation. An isolated lady chapel would be a place per se and not useful for those attending the services conducted in the choir, nor would it add to the internal effect. It is for these reasons that we have planned the chapels where shown, and no separated lady-chapel. The chapel in the position shown will be bright with its south windows. There will be a gleam of light from it.

"Another feature will be a broad soffit, 9 feet 6 inches wide, forming the eastern arch of the central tower. This deep sweep of soffit, or under side of the arch, will be carved with figures of angels, arranged in a suitable design. It would be, as it were, an angelic canopy over the Rood and will be an effective treatment. It would recall the words, "which things the angels desire to look

into," and the words of an old hymn, "Inter Angelos laudamus Te," "We praise Thee amidst the Angels." The angels could each hold a scroll with the words, "Sursum corda," the key-note, as it were, of the whole building.

"Beyond this arch would be the choir and the sanctuary. In the latter will be represented our Lord, in glory, blessing, in the upper part of a lofty and dignified Reredos.

"The stained-glass Clerestory windows, as they could be placed, should consist of single figures, for they are too high up to contain "subjects." The glass should have finely-colored figures on a light, silvery ground. These windows could set forth the history of religion in the world, beginning in the nave, with some of the old testament worthies, prophets and kings; and so on to Malachi, the last of the Prophets, and St. John the Baptist, and then to the apostles and saints of the new testament, and to many of later Christian years. We think, however, that all represented should be worthies of the old testament or Christian saints, recognized as such. The great church, however, will not have any very especial need of colored glass. It would be desirable, however, to have it in the south windows of the lady chapel, or the sunlight may be too strong there. It would be well, too, to have it at the east end windows of the apse. But there are other things for which gifts would be more desirable, before the glass, in point of time. There are many stone statues desirable, and many carved subjects.

"The site is a remarkably fine one, very commanding and beautiful. The cathedral will be a conspicuous object from the Capitol and other parts of the city. When complete, with its surrounding buildings, it will be 'as a city set on a hill.'

"Approaching the west end by a triple avenue of trees, those visiting the cathedral will find three lofty open arches, the central one wider, and much higher, than the other two. These lead to three wide vaulted spaces to be used as large porches or porticoes, and so on to the three recessed west doorways. The central portico could be treated richly internally with arcading and many statues and carved subjects. These statues would be such as the major and minor prophets, etc., etc., David and other worthies, all old testament characters, ending with St. John Baptist, who could be turning to the central entrance, where, in its midst, there could be the figure of our Lord blessing those who enter. Below could be inscribed 'Lux Mundi,' or 'Salvator Mundi.' St. John Baptist could hold a scroll inscribed with his 'Ecce Agnus Dei.'

The architects in their notes have the following to say in regard to the treatment of the building with respect to its richness, or the reverse: "We think the drawings show that it is amply rich enough. That there should be plenty of surface of massive stone ashlar is most desirable for all good architecture, especially with a building so large as this. A small building may be rich all over, but it is beneath the dignity of a great one. For a large building, if well designed, has an instinctive dignity and a grandeur about it that may well dispense with too lavish exuberance of ornament. Again, there should be concentration of richness and not a spreading of it all over a building. We think our building is rich enough. Internally, the Screen and the Reredoses, the Stalls and the Bishop's throne, could be as rich as any donor likes to make them; but we think the fabric is sufficiently ornate, taking it as a whole. That it will be impressive by its size and dignity we doubt not. As we have said, we have suggested a good many statues which will give much interest to the building. They could be added by degrees.

"On the central tower we propose to have a band of large angels, each holding a scroll with a word of the 'Gloria in excelsis Deo,' etc. They will give a rich effect and teach a constant song of praise. This band of angels



Design for Cathedral, Washington, D. C.
G. F. Bodley and H. Vaughan, Architects

will be an original treatment, not before attempted, certainly not on this scale. The figures would be about 10 feet high.

"Many details for the stone-work are already prepared, and progress could very soon be made.

"There remains the question of the stone to be used, and it is a very important one, for stone ashlar would be used both inside and outside the building. Knowing, as we do, the good effect of churches built entirely of a good light red stone, and the cold look that white stone has, we cannot but recommend the use of a good red one. It should be by no means brown, but of a good, soft-looking, rosy tint. We would mention Hoar Cross Church, near Burton-on-Trent, as a church where red stone is used with good effect, and the interior of Clumber Church, near Worksop. Lord Burton is now building a church at Burton all of red stone.

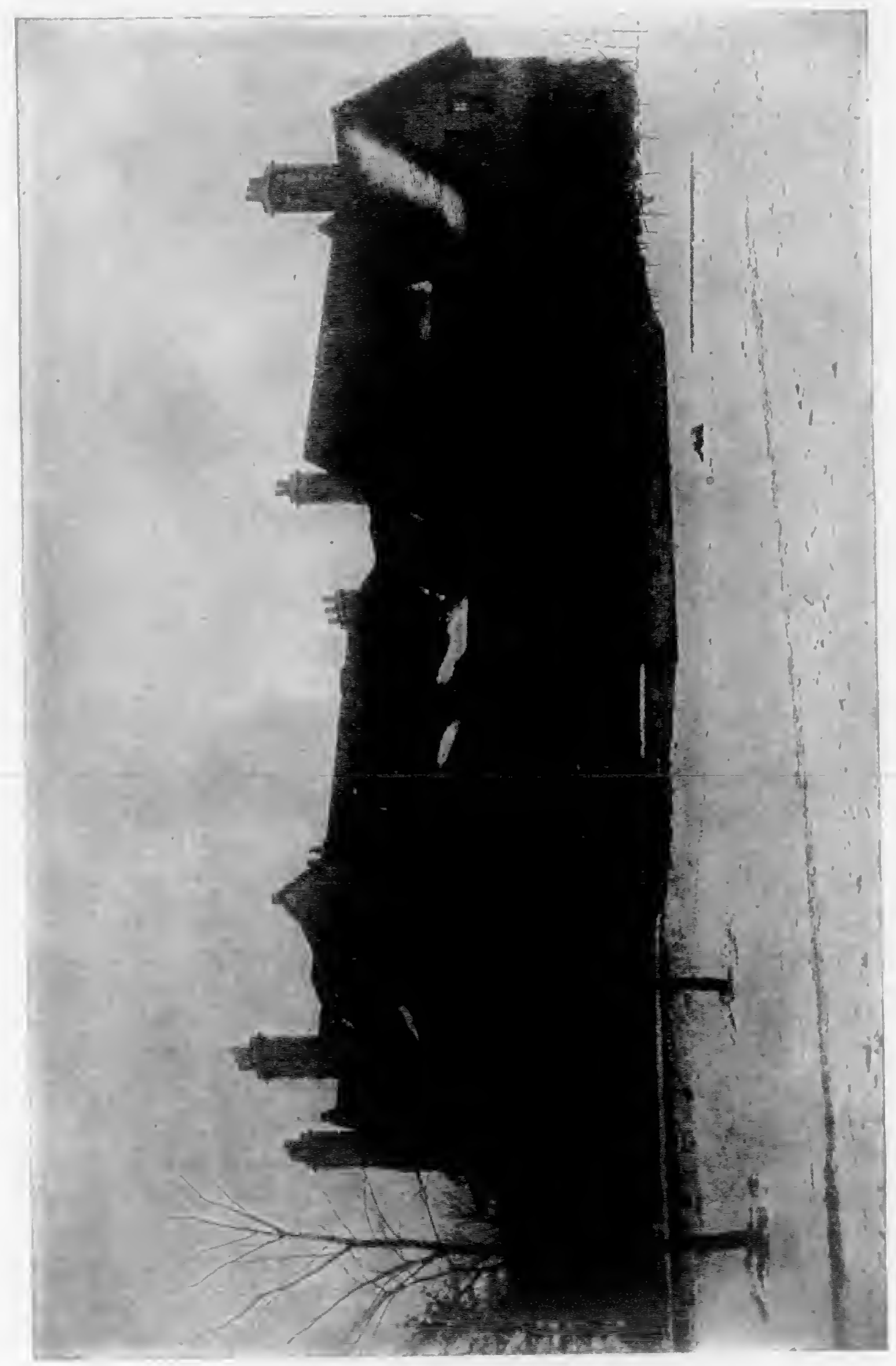
"The red stone we should use would not be too dark, or at all heavy-looking. With red stone a church has a warmth of color, and a look of the absence of newness, that is very satisfactory. Details for red stone are best bolder, and therefore less expensive, than those suitable for a white stone. Specimens of stones are laid before you. Our advice is that the best of the red stones be used. We believe it would be entirely approved of if decided upon.

"It does not seem necessary to have many steps at the west end. The ground does not require them. We think about four would be enough. To have many steps there would be to raise the fabric needlessly. There must, however, be a flight of many steps at both the transept entrances, as shown on plans.

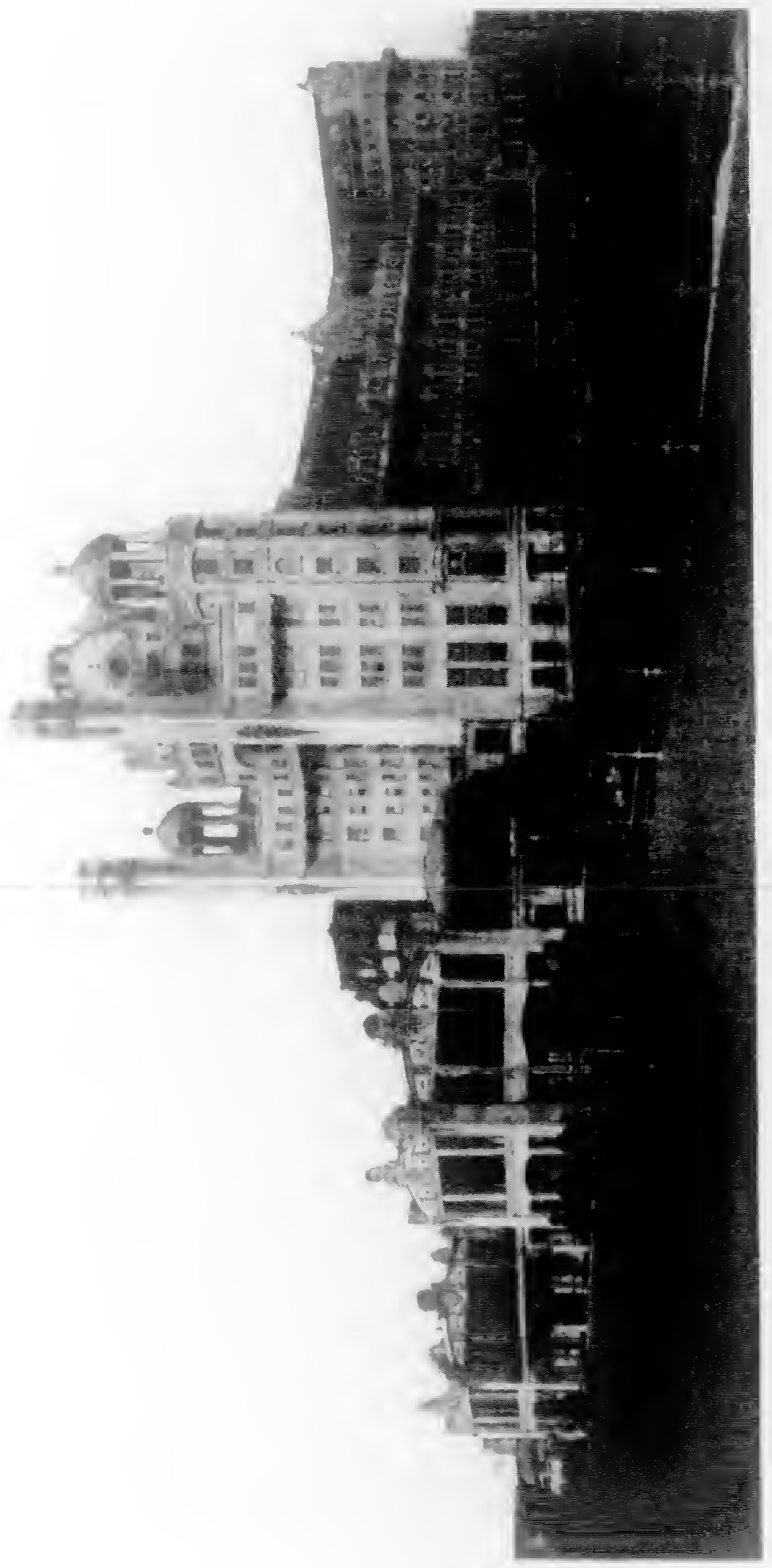
"The pavement of the interior should be of American marbles—simpler in the nave and aisles, richer in the choir, and especially rich in the sanctuary."



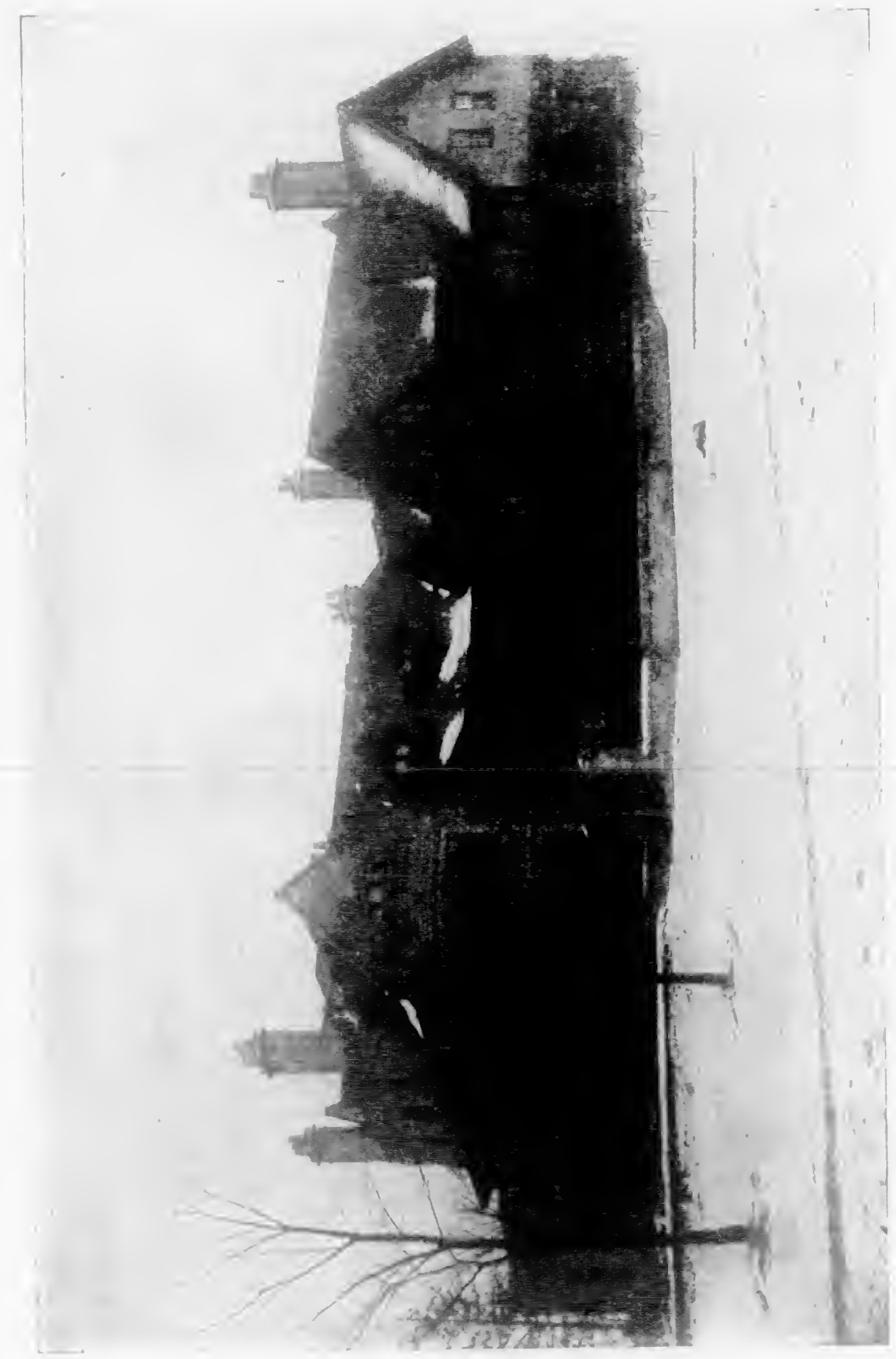
Marlborough—Blenheim Hotel, Atlantic City, N. J.
Price & McLanahan, Architects



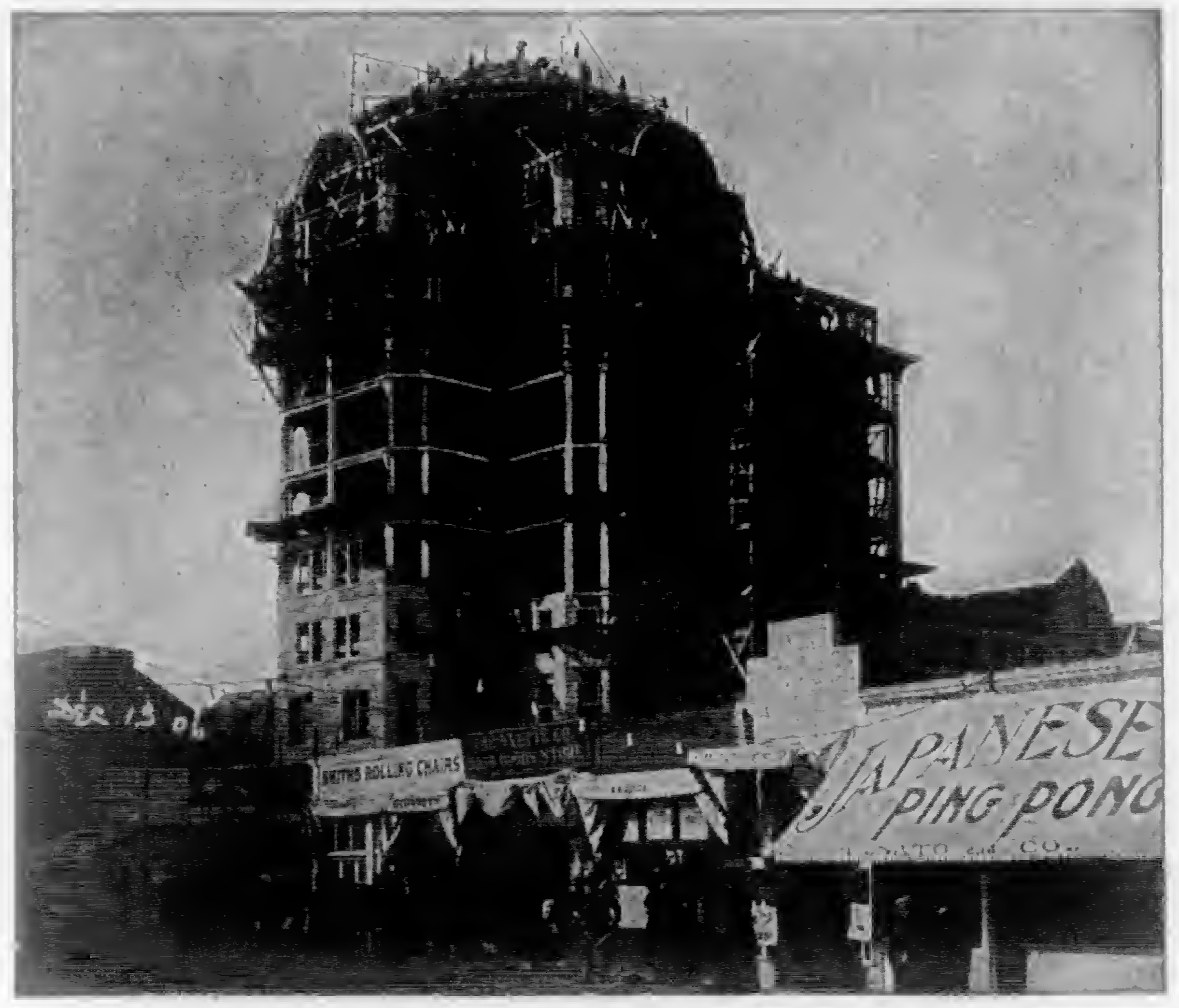
Residence of E. Chandler Walker, Walkerville, Ont.
Albert Kahn, Architect



Marlborough—Blenheim Hotel, Atlantic City, N. J.
Price & McLanahan, Architects



Residence of E. Chandler Walker, Walkerville, Ont.
Albert Kahn, Architect



Traymore Hotel, Atlantic City, N. J.
Price & McLanahan, Architects

The Kahn System of Reinforced Concrete

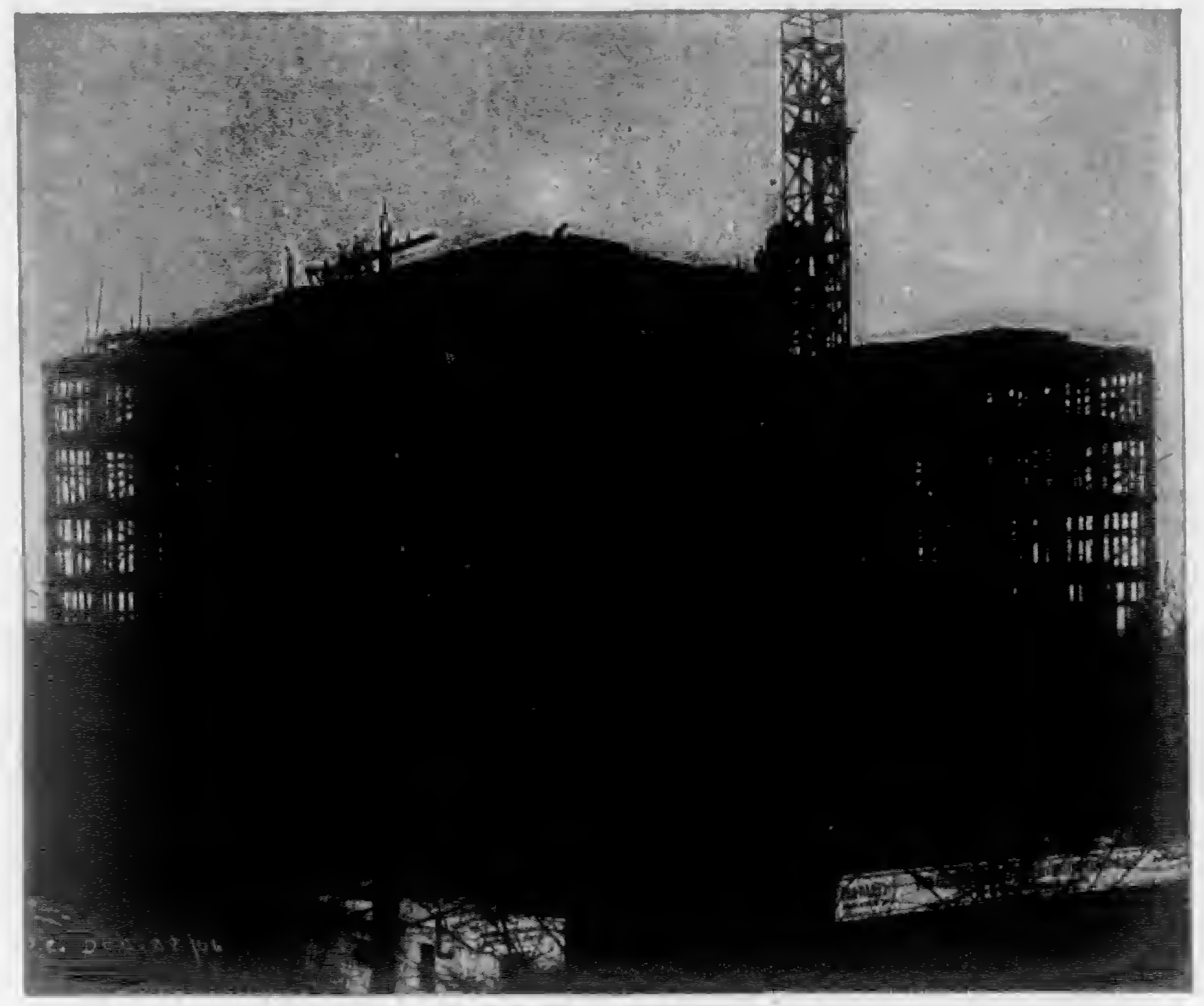
As Applied to Hotels, Residences and Apartment Houses

THE questions which arise in the planning and building of a home are the same as those which confront the builder of a hotel or apartment house and vice versa, the various phases of the difficulties simply presenting themselves in different proportions. For, after all, these buildings are all used for the same purpose and that which will increase the comfort and enjoyment of life in one will serve the same purpose in the other.

The speed of erection of a hotel or apartment house is an important factor. It is often the case that an old building is demolished to make place for the new and under that condition the property must be idle during the time occupied by both the destroying and creating periods. In large hotels and apartments this is a serious item and the only way to get around it is to have the new property in earning condition at the earliest possible time.

Closely connected with the requirements of speed is that of noiseless erection. It may be desirable to demolish only a portion of a hotel and allow the remaining portion to accommodate the guests during the construction of the new portion. If this is the case the use of structural steel with its noise is out of the question and concrete must be used. In the building of both the Marlborough-Blenheim and the Traymore hotels, this was one of the advantages of the Kahn system that appealed most strongly to the owners.

Comfort and security are, however, the prime factors to be considered in the building of a permanent habitation of any kind. The Kahn system renders a building sound-proof, dust-proof, clean and sanitary. The sound-proof quality is insured not alone by the concrete being a poor conductor of sound, but where hollow tile construction is used the air spaces in the tile



Perry Apartments, Seattle, Wash.
Somervell & Cotes, Architects

also act as insulation against the passage of sound. Moreover the dead weight of the construction is so great in proportion to the live load that the ordinary noises, such as moving of furniture and other heavy bodies, or the rapid and noisy moving about of people has no effect.

The solidity of the construction leaves no spaces between floors and in partitions where dirt and dust may collect during construction and become a perpetual nuisance by slowly working through openings and cracks afterward. Neither is there any place afforded after the construction is complete for the lodgment of objectionable matter. For the same reason the building is vermin-proof. The ease of regulation of temperature because of the excellent insulating properties of the construction, together with the above features, makes the building extremely sanitary.

Beside the things which insure the comfort and health of the occupants, that which will increase their pleasure—architectural beauty—must be taken into account. The Kahn system in no way interferes with exterior finish, in fact on the exterior of a building there may be no indication of its strong interior construction, while the possibilities of interior decoration are much increased. The perfectly flat ceilings prescribe no limits for the decorator's fancy or the workman's execution. Where columns are exposed they can be decorated to suit the taste and the architectural and decorative effect to be gained by the use of reinforced concrete stairways are limitless.

The necessity of having structures of this class fireproof is obvious. A suburban home may be closed for a season with its owners feeling safe that there is no danger from fire; the owner of a city home may well feel that his valuable furnishings are safe and his family free from danger of fire; the guests of a hotel need feel no alarm, being assured that there is no danger of a holocaust.

Architecture and Dress Reform

By GLENN BROWN, Architect, in the Inland Architect

A STRIKING commentary on modern architecture occurred at a recent fashionable evening reception. A craning of necks drew my attention to a man in faultless evening dress, startlingly transformed into an object of ridicule by a reflection in a mirror showing his back clothed in loose fitting red flannel. He was hustled from the room by the floor committee. Following the curious crowd, I obtained the following novel idea on dress reform:

"I am infatuated with the modern system of design in our great commercial buildings and see clearly its ready adaptability to modern dress.

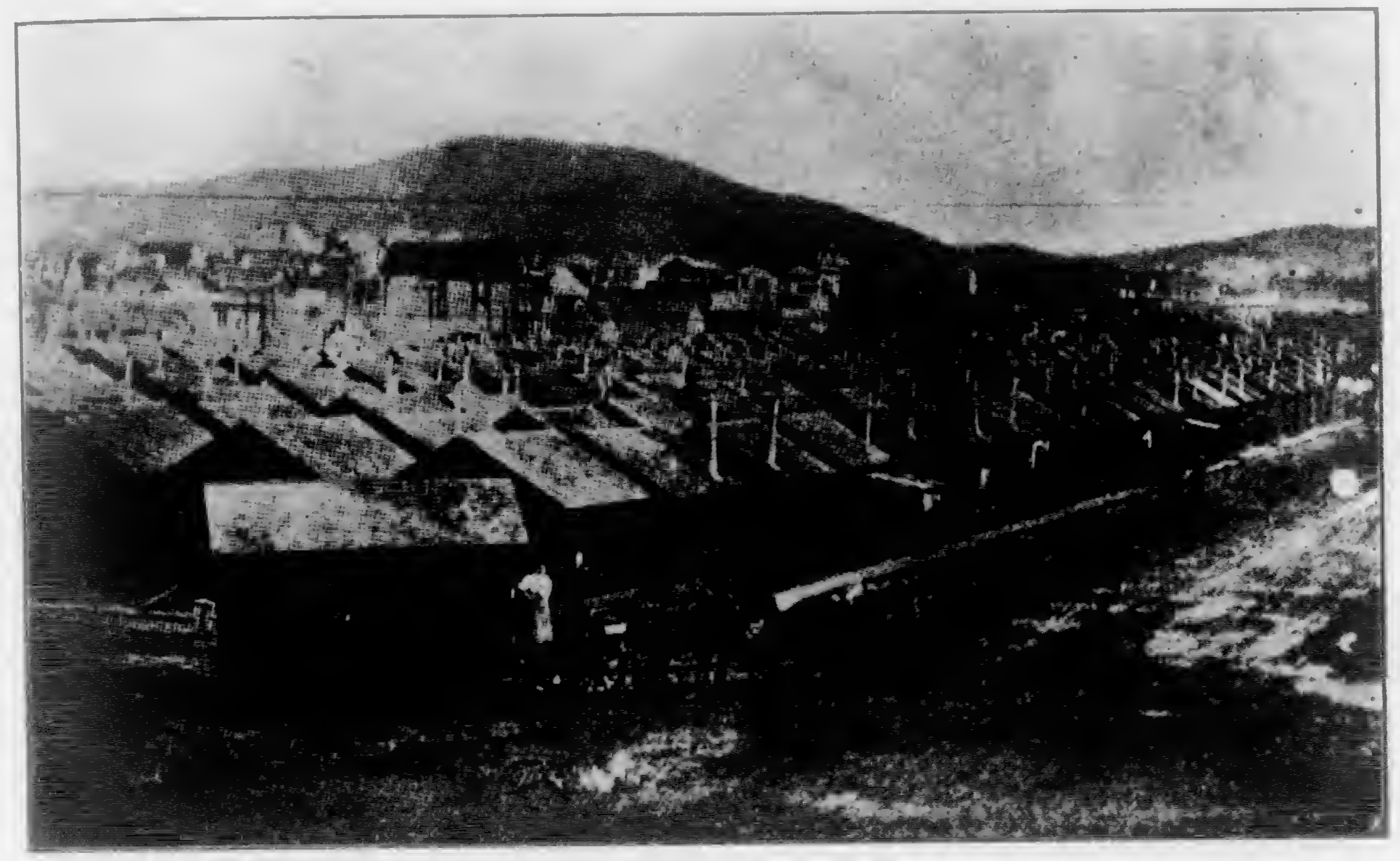


Modern Architecture—
Note the Difference in the Front and the Side of the Building



You have no doubt noticed how thoroughly our great architects have developed a style of great beauty for the front and economy for the rear. This innovation consists in building a front of precious stones and classic design and erecting the side walls without form or order of cheap and ugly material. While the offensive sides are always visible, no one is foolish enough to look at them. While the effect often destroys the beauty of a neighborhood sensible people see only the beautiful front. This wonderful system saves the architect time, money and trouble, as he has only one facade to design. It saves the owner's purse, as he has only one front to pay for. The great architects of official Washington, cultured Boston, commercial New York and progressive Chicago all zealously follow the system.

"After mature consideration I have determined to adopt the same system with my clothes. I have rich material and elegant cut for my front and cheap material without form for my back. It saves fitting, study and goods. Only the elegant front will be enjoyed and the offensive rear will never shock an intelligent being. The system has so many advantages I know all wise people will adopt the reform dress and follow the lead of the architects, the one profession which makes a study of beauty, fitness and harmony."



Camp at Lake Street and Thirteenth Avenue, San Francisco, Where 1600 Houses Provided Temporary Homes for 4000 People. The Wagon in the Foreground Shows the Manner in Which the Houses Were Recently Removed by Order of the City Authorities

A Plumber's Job in San Francisco

How Thousands of Temporary Homes Were Equipped With Sanitary Fixtures and a Description of the Permanent Plumbing Work in the Home of the Aged

By G. A. B. SPENCER*

THE facts of the great disaster in San Francisco a year ago are no longer news but history, and so rapidly have events hurried onward since that it seems impossible that but a year has passed. Any aspect of it that can be presented seems to me a twice-told tale, though everyone who lived through that fearful ordeal will testify that the half has never been told, nor can it be. No pen or tongue can ever portray the horrors of that catastrophe, or overestimate its consequences. No time has been wasted in idle contemplation. Hands that were busy before have been busier since.

The genial climate made life in tents temporarily comfortable, and there were months of wholesale picnicking, but the business of a great city could not go on in such fashion.

The homeless people were encamped everywhere that tents could be pitched or shacks set up. The feeding of the multitude was a modern miracle; their transition from tents to cottages was another.

The munificent gifts from sympathetic friends, making up the great Relief Fund, and the organized efforts of the Red Cross Society in distributing it are also matters of history that may not be overlooked in any allusion to the disaster. One point that has never been widely exploited was the tremendous and immediate demand for mechanical work and the over-taxation of every facility to meet the emergencies arising.

Since the work of "rehabilitation" has loomed so large in San Francisco there have been many attempts to write it up from many different points of

*Extracts of a paper printed in Domestic Engineering, May 18, 1907.

view, but I take it that nobody else ever sees all that the plumber sees, and no one so far has written from the plumber's standpoint.

When twenty-five hundred acres of a populous city was at once reduced to chaos, the source of supply for all the Pacific States was destroyed and there was absolutely nothing to work with, of either material or tools, to be had on the Pacific Coast. The prompt action of the organization of master plumbers in other Pacific Coast cities, followed by similar gifts from the East, in sending by express tools and money to begin with, was a relief beyond expression, demonstrating the practical and fraternal character of our "association."

Everything had to be brought from the East over railroads congested with other urgent supplies. Water and gas mains and sewers were broken, and all water and gas pipes, electric wires and street railways out of commission. These were the conditions. Business firms hurried into temporary buildings with amazing celerity, and their necessities were beyond the power of the forces to be employed. But the consideration of homes for refugees had to be undertaken, and nothing less than a centralized authority, with unlimited means, was adequate to deal with it.

In the course of the summer the victims of the earthquake and fire most able to do for themselves became self-dependent, but many thousands remained who could have no hope of being able to pay rents in the city, for whom cheap homes must be provided. To meet this necessity the board of directors of the San Francisco Relief and Red Cross Funds organized a land and building department, of which Thomas Magee was chairman.

I was asked to look over the public squares and parks to consider the feasibility of their proper sanitation and facilities of connection with city sewers. The notes made in doing so afforded the data for the plans, which I very soon had ready, and which were adopted by the department.

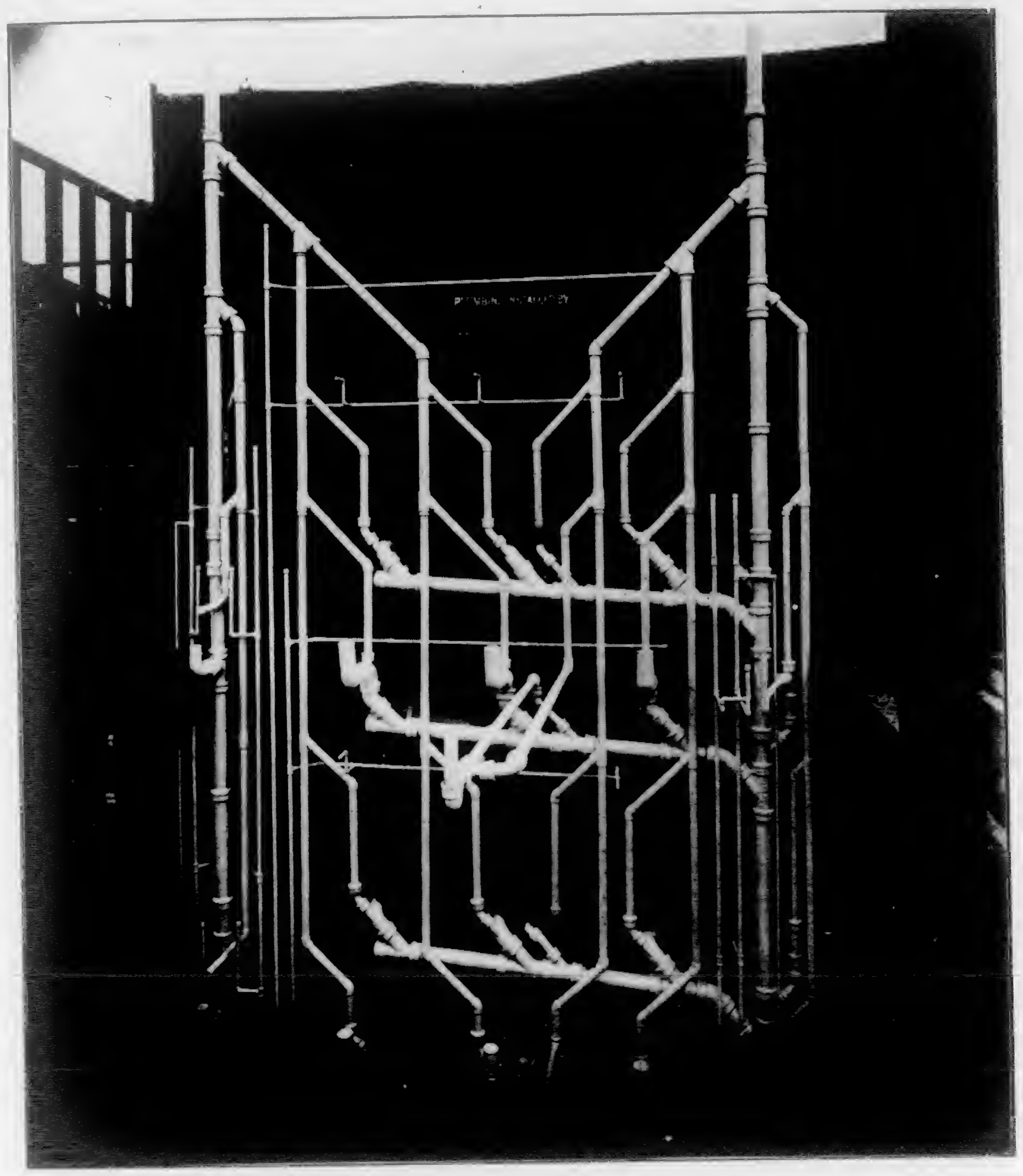
Then the squares and parks had to be regularly laid out for as many rows of small cottages as each could properly accommodate, the cottages being of one design—having two or three rooms—and at regular intervals groups of closets. Each square having a large social hall, a double cottage to be used for a business office and dispensary, and in the larger squares public laundries and bath houses.

For these extensive plans of building the plumber's work had to move in quick step.

Difficulties rose up as if the earth and all within it, and upon it, were still quaking. To begin with, the lumber trust had raised the price of lumber to rates that would seem to demand all the money in sight. Mr. Mackie, the general manager of the department, actually "took to the woods," not because he was scared, but to get behind the trusts, and there secured 3,000,000 feet of lumber, and shingles galore. Steamers were chartered to bring it to the city, and unable to get teams to haul it, men and teams had to be brought from another county, mills to be set up on the ground, and various other obstacles to be overcome.

The carpenters' union would give a card to any man who could drive a nail, so their work rushed; but the plumbers' union, more jealous of their craft, would give cards only to competent men and accepted only as such men who presented cards from affiliated unions, and though the highest wages were paid, it was impossible without unceasing maneuvering and moving of men from one point to another, to keep the plumbers' work up to the carpenters, though seventy journeymen plumbers were employed.

There were not available plumbers enough in the city. Advertising for forty men often brought us but three or four. We advertised in the papers



Roughing in the Lavatories

and put up painted canvas notices, 15 by 3 feet, at prominent places calling for plumbers. On two occasions an emergency was met by accepting all the men we could get for a Sunday who were working for other firms and paying them double wages for the day, as the only way to keep up with the carpenters and have the cottages ready for use before the winter rains should set in.

Our work on these temporary buildings began at South Park, a beautiful garden spot in what had once been a fashionable residence quarter, but more recently occupied by mechanics and laborers. Nineteen apartment houses were built in this park, all sewered, with patent flush closets, water and gas in each room and hall, kitchen sinks, gas stoves, etc. The San Francisco Gas Company installed the gas pipes, fixtures and stoves in all the other parks and squares where gas is used.

The other thirteen squares and parks were used for the system of small two and three-roomed cottages, and being widely scattered, there had to be

view, but I take it that nobody else ever sees all that the plumber sees, and no one so far has written from the plumber's standpoint.

When twenty-five hundred acres of a populous city was at once reduced to chaos, the source of supply for all the Pacific States was destroyed and there was absolutely nothing to work with, of either material or tools, to be had on the Pacific Coast. The prompt action of the organization of master plumbers in other Pacific Coast cities, followed by similar gifts from the East, in sending by express tools and money to begin with, was a relief beyond expression, demonstrating the practical and fraternal character of our "association."

Everything had to be brought from the East over railroads congested with other urgent supplies. Water and gas mains and sewers were broken, and all water and gas pipes, electric wires and street railways out of commission. These were the conditions. Business firms hurried into temporary buildings with amazing celerity, and their necessities were beyond the power of the forces to be employed. But the consideration of homes for refugees had to be undertaken, and nothing less than a centralized authority, with unlimited means, was adequate to deal with it.

In the course of the summer the victims of the earthquake and fire most able to do for themselves became self-dependent, but many thousands remained who could have no hope of being able to pay rents in the city, for whom cheap homes must be provided. To meet this necessity the board of directors of the San Francisco Relief and Red Cross Funds organized a land and building department, of which Thomas Magee was chairman.

I was asked to look over the public squares and parks to consider the feasibility of their proper sanitation and facilities of connection with city sewers. The notes made in doing so afforded the data for the plans, which I very soon had ready, and which were adopted by the department.

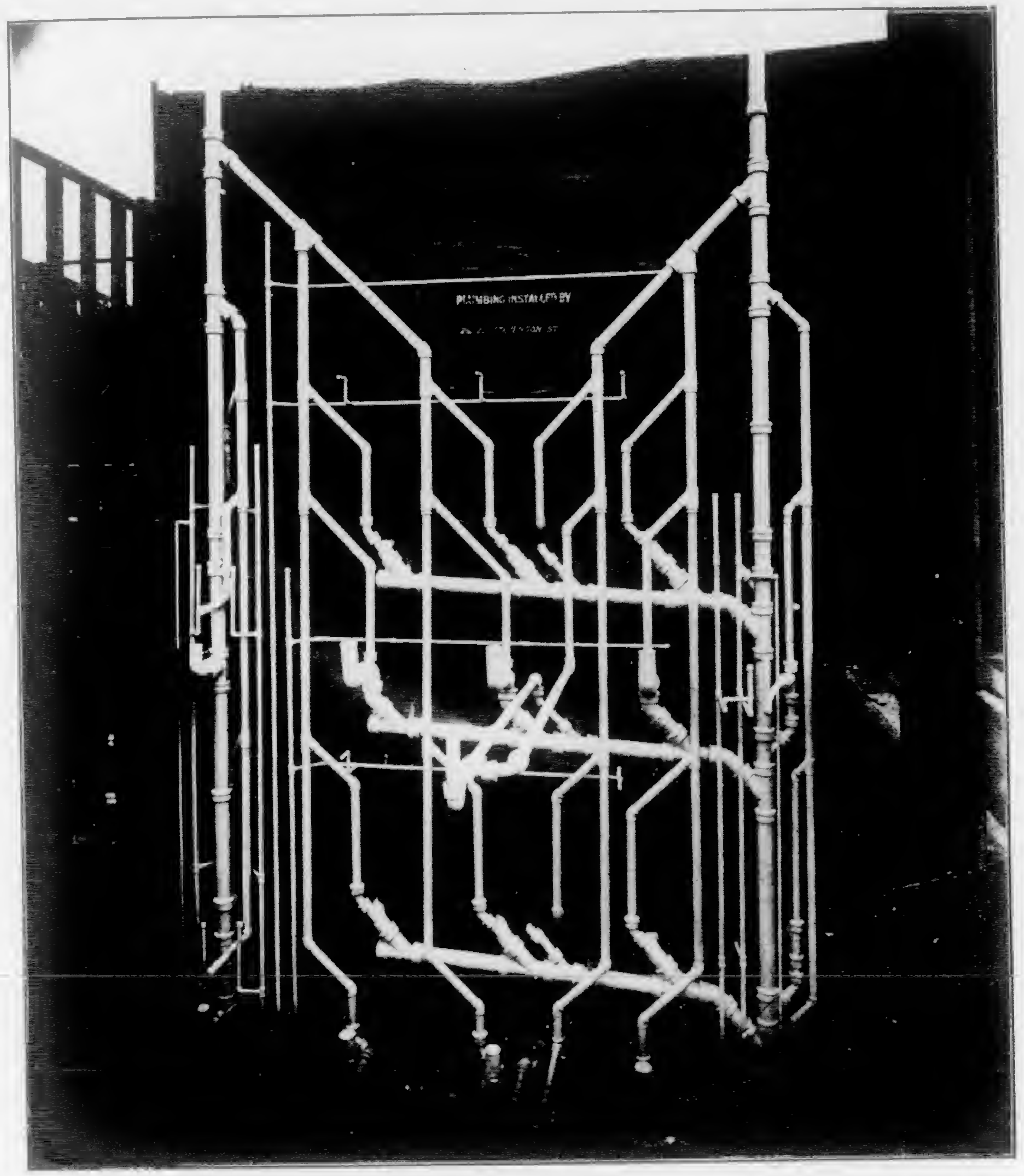
Then the squares and parks had to be regularly laid out for as many rows of small cottages as each could properly accommodate, the cottages being of one design—having two or three rooms—and at regular intervals groups of closets. Each square having a large social hall, a double cottage to be used for a business office and dispensary, and in the larger squares public laundries and bath houses.

For these extensive plans of building the plumber's work had to move in quick step.

Difficulties rose up as if the earth and all within it, and upon it, were still quaking. To begin with, the lumber trust had raised the price of lumber to rates that would seem to demand all the money in sight. Mr. Mackie, the general manager of the department, actually "took to the woods," not because he was scared, but to get behind the trusts, and there secured 3,000,000 feet of lumber, and shingles galore. Steamers were chartered to bring it to the city, and unable to get teams to haul it, men and teams had to be brought from another county, mills to be set up on the ground, and various other obstacles to be overcome.

The carpenters' union would give a card to any man who could drive a nail, so their work rushed; but the plumbers' union, more jealous of their craft, would give cards only to competent men and accepted only as such men who presented cards from affiliated unions, and though the highest wages were paid, it was impossible without unceasing maneuvering and moving of men from one point to another, to keep the plumbers' work up to the carpenters, though seventy journeymen plumbers were employed.

There were not available plumbers enough in the city. Advertising for forty men often brought us but three or four. We advertised in the papers

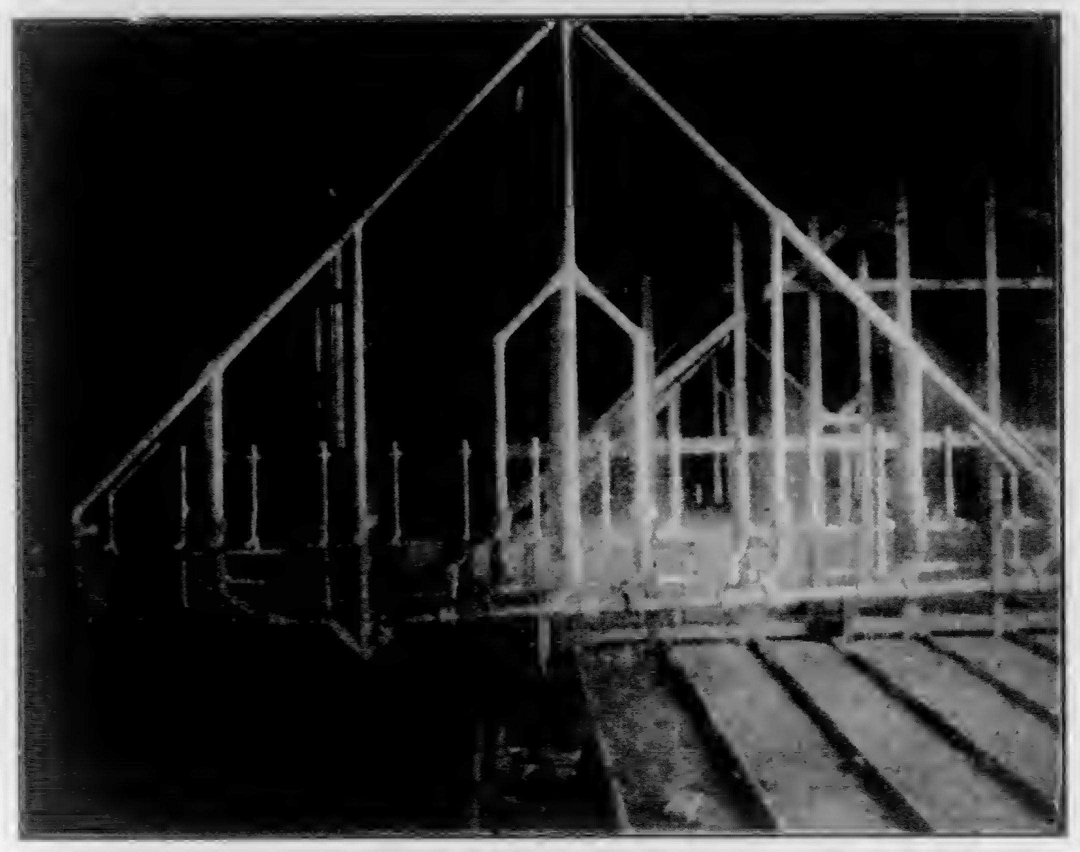


Roughing in the Lavatories

and put up painted canvas notices, 15 by 3 feet, at prominent places calling for plumbers. On two occasions an emergency was met by accepting all the men we could get for a Sunday who were working for other firms and paying them double wages for the day, as the only way to keep up with the carpenters and have the cottages ready for use before the winter rains should set in.

Our work on these temporary buildings began at South Park, a beautiful garden spot in what had once been a fashionable residence quarter, but more recently occupied by mechanics and laborers. Nineteen apartment houses were built in this park, all sewered, with patent flush closets, water and gas in each room and hall, kitchen sinks, gas stoves, etc. The San Francisco Gas Company installed the gas pipes, fixtures and stoves in all the other parks and squares where gas is used.

The other thirteen squares and parks were used for the system of small two and three-roomed cottages, and being widely scattered, there had to be



Showing the Roughing in for Eight Basins; One of Several

differences of plans to suit each location. The first sod was broken for these September 11, 1906. Five miles of sewers were laid to accommodate these cottages, and we feel justified in some degree of pride that the sanitation of these parks has been so successful. In these public squares we installed 667 patent flush closets, 247 hoppers and more than six miles of gas and water pipes, with all necessary fittings and incidentals; 325 galvanized sinks with faucets and traps were put into the apartment houses at South Park, and 624 gas brackets; 4168 three-room cottages and 1770 two-room cottages are included in this undertaking. Besides these 210 rooms and ten lofts, with kitchens for 1000 people, have been equipped at Ingleside for refugees who are not self-supporting.

These buildings are now occupied, within a year after the conflagration which made them necessary and seven months from the day the first sod was broken for them.

At South Point Lobos, a strip of land designed for a boulevard to connect Golden Gate Park with the Presidio, but not yet raised to the required city grades, was appropriated for this purpose, but having an elevation below the level of the sewers in that vicinity. To overcome this difficulty an automatic electric injector was installed, by which the drainage of 600 houses is pumped from a large cesspool, carried several hundred feet and discharged into the main sewer, involving a lift of twenty-five feet.

The larger parks are provided with general laundries, with abundant hot water for all, laundry trays, drying rooms, and all accessories. The heater for these is in the center of the building, the other half being used for separate bath houses, with enameled tubs and shower baths, for men and women.

In this brief time 30,000 people had been provided with shelter.

The extensive and permanent buildings on the Almshouse Tract to be used as a "Home for the Aged and Infirm," would also have been ready for use had not all concerned been hampered by inability to get lumber and material as fast as needed.

The plumber's part in these buildings includes an elaborate but practical system, by which both time and material were economized, a circulating system for hot water throughout, and a complete vacuum system steam heating the whole establishment, as well as the sanitary engineering necessary for the perfect sanitation, ventilation and sewerage satisfactory to the requirements

of the board of health. Standard goods have been used and all material is of the best quality. The "Home for the Aged," the first public building erected in San Francisco after the fire, with a capacity to care for 2500 persons, is a two-story structure covering a space of 600 by 350 feet, to be heated throughout by a vacuum system of steam heating, requiring 5302 square feet of direct radiation. It has 556 sanitary fixtures and 364 radiators. It will be a monument to the honor and fidelity of the building committee, of whom Thomas Magee is chairman. His watchful eye has been over every transaction, while the unbending force of character and tireless energy of Alexander Mackie, general manager of land and building department, are pushing to completion the magnificent plans of the architect, William Curlett.

* * *

The A. I. A. Schedule of Charges

By ELMER GRAY, Architect

REGARDING the remuneration of architects and the present schedule of the A. I. A. my own opinion is that this schedule should be entirely abolished. It is not a question of whether the schedule is adjusted as it should be or not, but of what its effect has been and is upon the public. As a result of its stipulating that a minimum charge of five per cent on certain classes of work be charged, and of the deplorable practice of some of its members to charge five per cent (or less!) for all classes of work, the general public has overlooked the word "minimum" and has jumped at the conclusion that five per cent is the uniform rate recommended by the Institute for all classes of work. So widespread and so thoroughly grounded is this erroneous impression that the most effectual way of correcting it would be, it seems to me, to abolish the Institute's schedule altogether. Of what use is the latter? Those who are worth that much or more and who have backbone enough to charge what they are worth, are not in need of it, and those who wish to cut rates do so anyway whether they are members of the Institute or not (and are probably not worth much more than they charge).

I would have it advertised by appearance in all the daily papers that the American Institute of Architects had abolished their schedule of professional charges because of its having created a wrong impression with the public, and also because the wide diversity of abilities among its members made it impossible to recommend a uniform rate. We should not have the principle of trades-unionism which levels all craftsmen to a common scale of remuneration, regardless of their ability, encouraged by any enactment of the American Institute of Architects.

* * *

A Handsome Cement Finish

OF THE several reinforced concrete office buildings that have been constructed in San Francisco since the fire none has attracted greater attention or received more favorable comment than the Macdonough building on Kearny street, designed by Architect William Curlett, John B. Leonard, engineer, and built by the Thompson-Starrett Company. In appearance the structure is most imposing and substantial. The exterior cement finish is particularly attractive and is the result of not a little experimenting and study on the part of Architect Curlett and his assistants. The external dressing is composed of a mixture of marble dust, white sand, cement, etc., the combination producing a clear ivory white that stands comparison with almost any other exterior finish heretofore produced. The mixture affords a very hard finish and it is claimed it will be permanent. The expense of the dressing is little if any more than the ordinary cement finish.

The National Irrigation Congress

THE threatened timber famine in the United States was one of the timely subjects discussed at the recent National Irrigation Congress in Sacramento. To all those interested in forestry it is a cheering omen that the railroads are beginning to realize their plight and fall back on commercial forestry as a solution of their timber problem. Steel ties, steel cars and concrete in many forms may some day reduce the wood consumption of the American railroads, but according to E. A. Sterling, Forester for the Pennsylvania Railroad Company, it is a peculiar fact that the use of substitutes so far has not reduced the use of wood in ship building, railroad work or general industrial enterprise.

"The Conservation of Natural Resources" was the subject of an address of considerable interest to the delegates by United States Forester Gifford Pinchot. The lowest estimate reached by the forest service of the timber now standing in the United States is fourteen hundred billion feet, board measure; the highest two thousand billion. The present annual consumption is approximately one hundred billion feet, while the annual growth is but a third of the consumption, or from thirty to forty billion feet. If we accept the larger estimate of the standing timber, two thousand billion feet, and the larger estimate of the annual growth, forty billion feet, and apply the present rate of consumption, the result shows a probable duration of our supplies of timber of not more than thirty-three years. It is evident that all the waste must, if possible, be prevented.

One of the sensations of the Congress was the charges made against the administration of the reclamation service in connection with the Owens River project. A delegation from Inyo County presented a resolution calling for a Congressional investigation.

P. W. Forbes of Inyo County, spoke vehemently upon the resolution. He claimed the people of Owens Valley had a complaint to make. He said water rights were taken away and given to Los Angeles.

Delegate Hall said rights were taken away by clients of his because it would interfere with the reclamation project. The reclamation project was abandoned, and the rights were not restored. The owners were poor men and had to sell their claim to the rights. He said thousands of acres of land without a stick of timber on them have been placed in the forest reserve. The land was good only for agriculture, but as it was a forest reserve it could not be used.

In answer to questions he said that hundreds of acres of land had been withdrawn, the project had been abandoned, but the land not restored. He claimed the reclamation service was at fault.

Hall continued excitedly and made the following charge against Lippencott:

"If it is necessary we can show that J. B. Lippencott, Chief of the Reclamation Service, was in the employ of the City of Los Angeles and the entire project was simply a plan for the benefit of real estate men of Los Angeles.

"That's the fact, gentlemen. You've got it straight from the shoulder. I never met Lippencott, and I hope I never will."

Chairman Pardee warned Hall not to indulge in personalities.

Lippencott sat in the front row but was unmoved by the charge.

Congressman Smith said the Inyo people had no feeling against Los Angeles.

The complaint of the people of Owens Valley was that the country was to be devastated of its water for the benefit of the people of Los Angeles. The Los Angeles people intend to use the water for irrigation of farms in the vicinity of Los Angeles, out of the watershed of the Owens River, leaving that land to be devastated.

Steel an Important Factor in the Rebuilding of San Francisco

By E. O. RITTER



Fig. 1. Showing Bent and Twisted Steel Taken From the Old Emporium Building

ONE who is not directly interested in the building line could scarcely have any idea of the vast amount of building material that has been coming into San Francisco from outside points during the past year. Of this material a very large percentage has been structural steel and iron, something like forty-four thousand tons having been received to date. In addition to this about fifteen thousand tons of old steel and iron have been taken from the ruins, transported to various storage yards and shops and much of it is now being worked over; straightened, rebuilt or remelted as the case may be, and again put into service.

One of the most prominent pieces of work of this description at the present time is the old Emporium building which is being reconstructed and made serviceable again. The old steel in this building was first taken from the ruins and accumulated in a vacant lot (Fig. 1) at the west side of the building, where it was piled up with derricks, and where a straightening plant and workshop were then established, as seen in the photograph marked Fig. 2. From there the steel is again hoisted and placed within reach of a travelling crane, by which it is conveyed to the straightening and riveting machines (Fig. 3). Many pieces when brought forward were badly bent and twisted but after going through this process, came out in fair condition. Any members proving too brittle, which fact is shown by



Fig. 2. Showing Wall of Emporium Building; Also, Steel Pile and Work Shop at a Distance

the development of cracks or breaks during the straightening process, are thrown aside and used for scrap, or sometimes made use of in places where shorter pieces are required.



Fig. 3. Showing Straightening Machine; Also Steel Beams, Before and After Passing Through Same

Beams, channels and angles are straightened without much difficulty, but in the case of built sections such as columns, trusses, plate or box girders, etc., it is necessary in most cases to cut them apart partially or wholly and then re-rivet. Much more tonnage is now being used in the reconstruction of the building than was originally designed to carry the floor loads, and in this manner, to a certain extent, it is expected the deficiency of the steel in strength will be made up in weight.

Other collections of old material worthy of mention are shown in Figures 4, 5, 6 and 7. Figure 4 shows the mountains of old steel and iron accumulated by the Judson Manufacturing Company in Emeryville, there being close to three thousand tons shown in the picture. Figure 5 is another view of the same, showing a few of the old Palace Hotel girders in the foreground.

Figure 6 is a picture of the steel yard of C. J. Tallon & Co., in San Francisco, which covered almost half a city block, and Figure 7 shows a view of the Great Western Iron and Steel Company's yard at Spear and Folsom streets, San Francisco, where there is probably one of the largest collections of scrap cast iron, etc., in the country.



Fig. 4 Showing a General View of Steel Pile in Emeryville

* * *

Mistress—I want a girl for general housework; some one who is strong and willing and will do everything.

Bridget—Do yez take me for a Taft?

* * *

Our President, remark!
His many powers note!
For with one hand he rocks
The cradle and the boat.—Wasp.



Fig. 5. Another View of Fig. 4 Showing Old Palace Hotel Girders in the Foreground

Concrete Blocks

The first great obstacle to the concrete block industry has almost entirely disappeared. It consisted of the large number of incompetents who rushed into the business upon the seductive representations of charlatan salesmen, whose sole purpose it was to unload machinery, and to collect, regardless of the purchaser's possibilities for success. As a consequence of this, at the start a large majority of those who essayed to make this kind of building material had no previous knowledge of such things, and many of them were incompetents of known record, who were misled into believing that this pronounced advance in building materials was a "get-rich-quick-scheme," which waited upon the first man in each community to commence operations.—Rock Products.

* * *

Architect's Plans vs. Builder's Estimates

The craze for cheap cottages has had the effect of making people believe that substantial buildings can be erected for small sums, and that an architect can anticipate the outlay to a penny, says a recent issue of one of the London architectural papers. A case, which was heard a few days ago in the Portsmouth County Court, suggests the effect of the belief. An architect in Fareham prepared three sets of plans and specifications for a client who wished to erect a cheap house. The defendant said that he could not expend more than £300 (about $1500) on the building, but the builder's tender was £364. Then the defendant said he could not use the plans and returned them. Afterward a check for £3 3s. was sent, which plaintiff declined to accept on the ground that the



Fig. 6. Showing Pile of Old Iron and Steel Taken at Fourth and Bryant Streets, San Francisco



Fig. 7. Showing Piles of Scrap Iron Taken at Spear and Folsom Streets, San Francisco

amount was below the institute scale. A builder gave evidence that the cost of the house as erected from other plans was £283. The Judge decided in favor of the defendant. He considered that when a man asked for plans of a house to cost £300 it was unreasonable to plan a house that would cost £364. Such a difference was too wide to be excused. The plaintiff, therefore, not only loses his labor, but will have to pay costs. The ruling is likely to have a good effect.

* * *

An Ingenious Fire Escape

A Swiss engineer announces a new fire escape. It consists of a series of folding ladders, contained in frames, attached to the window cases, each reaching to the window below. By merely turning a small winch on any floor all these frames are pushed outward from the building, the ladders extended and securely connected with each other, thus forming a continuous communication from the top floor to the ground. The manipulation is simple and takes less than a minute. When not in use the escape is barely visible, and does not disfigure the facade of the building in the manner that the ordinary outside iron staircase does. A public test of the new escape has proven successful, and the Vienna fire brigade representatives have expressed their approval of it.

* * *

Magnate—Every dollar I have was made honestly.

Dyer—By whom?

* * *

You can push a pen but a pencil has to be lead.



Fig. 8. View Showing the Present Condition of the Old Siminoff Building on Golden Gate Avenue

Alaska Commercial Company's Great Fire-Proof Building

OF THE several large Class A buildings now rapidly nearing completion in the banking and financial district of San Francisco, none is attracting greater attention than the Alaska Commercial Company's building at the northeast corner of California and Sansome streets. It has been pronounced by experts a model of high-class, modern engineering. The steel work is so nearly perfect that before the stone and brick facing was put on one of the big steel contractors of the city was heard to remark: "It is a shame to cover that beautiful steel frame with a lot of ugly stones and brick." When completed the building will be as near fire and earthquake proof as time, experience and money can make it.



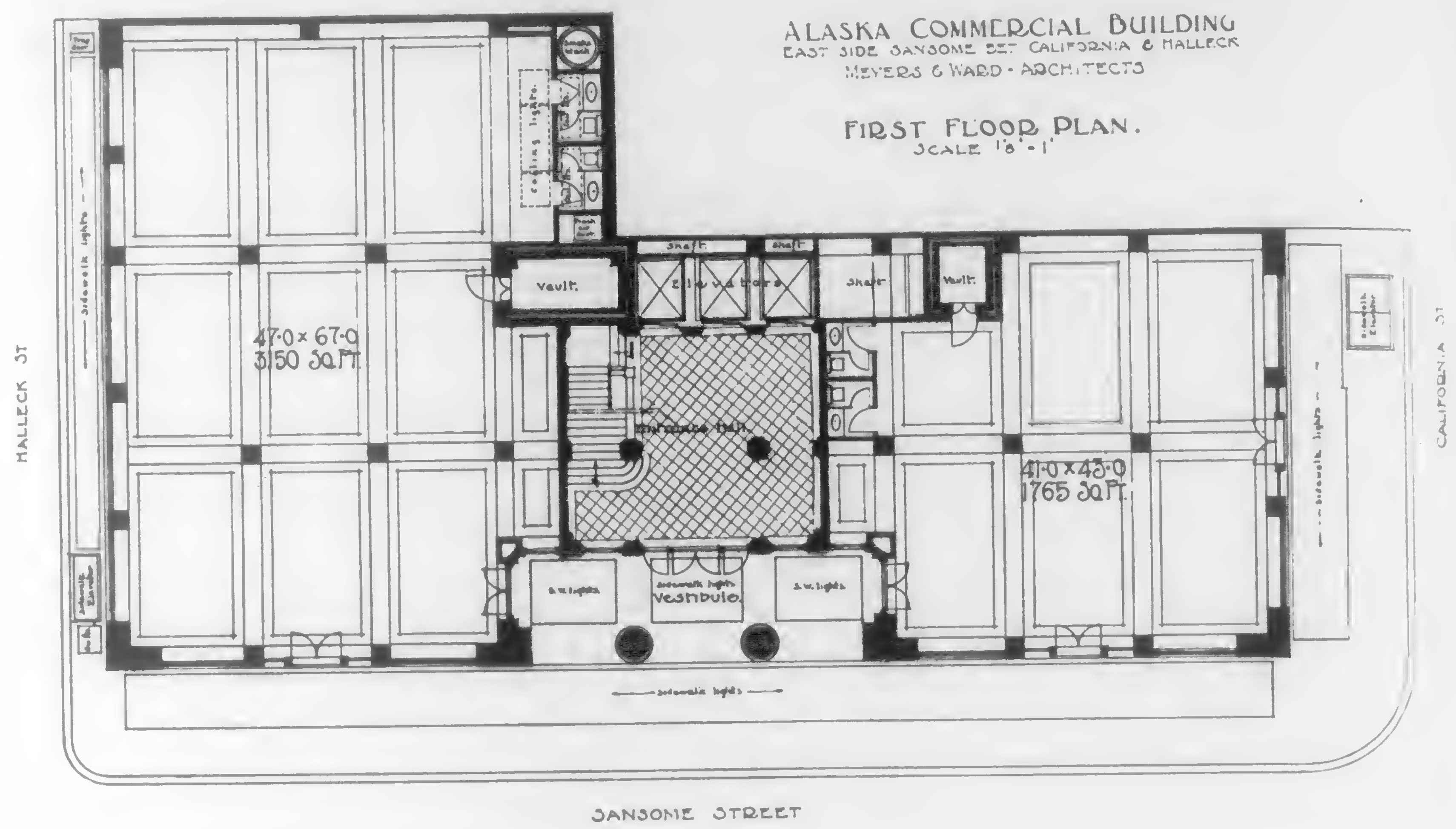
Alaska Commercial Company's Building
Meyers & Ward, Architects

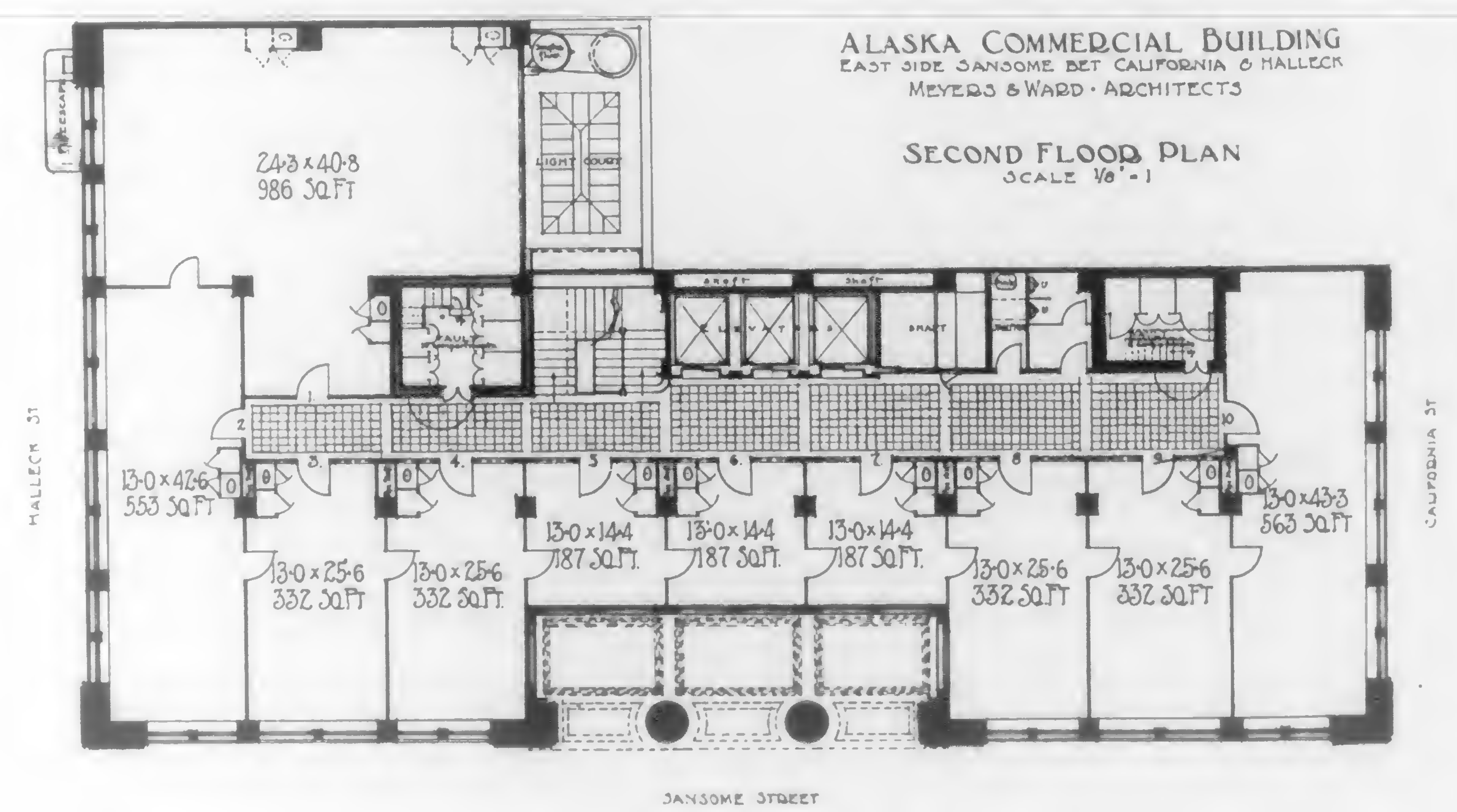
Too much can not be said of the merits of this building. It is twelve stories in height and will contain large and well-lighted offices all fronting on the street. The first three stories are of California granite, the balance being faced with gray pressed brick and ornate terra cotta trimmings. The foundation is of reinforced concrete and steel resting on piles. The steel frame is designed so as to embody all of the improvements of modern engineering. The entire building will be fire-proofed from top to bottom with reinforced concrete. The plumbing throughout is of the highest type and strictly sanitary. For fire protection there will be pumps in the basement to throw powerful streams of water to the top of the building. There will be no wood whatever in the building, floors being of concrete covered with battleship linoleum. The doors and trim throughout are of metal, and all doors and transoms are glazed with wire glass of an ornamental pattern to act as a fire retardent. All corridor floors will be tiled with marble, and marble wainscoting will extend to the top of the doors. The main entrance hall in the first story will be of richly carved marble throughout.

Meyers & Ward are the architects. The building is equipped with Otis elevators of the most improved type.

* * *

The severest punishment a man can receive who has injured another is to have committed the injury; and no man is more severely punished than he who is subject to the whip of his own repentance.





Cost of Excavating Earth

IN EXCAVATING some 25,000 cubic yards of earth for the construction of a railway siding for the Pennsylvania Railroad near Homewood, Pa., wheel scrapers and Koppel portable track and dump cars were used side by side. About two-thirds of the material was handled by the cars and the remainder by scrapers. From figures furnished by the Arthur Koppel Co., Pittsburg, Pa., and compiled by Dodge & Day, engineers, Philadelphia, Pa., the Architect and Engineer is able to give the following comparative records of the two methods of handling the material during one month when the conditions under which the car and scraper outfits worked were practically identical. The dates as recorded and furnished do not permit of any exact analysis and comparison in detail, and they are given here as partial figures only.

As the cost of handling ores is approximately the same as herein given we publish this record as of interest to the construction world in general, especially the figures on Koppel car work.

Wheel Scraper Work.—The wheel scraper work was nearly all borrow pit work, the soil being good average earth, easily plowed with a three-horse grading plow. The haul was from 150 to 450 feet and averaged 350 feet. No. 3 Western wheel scrapers were used, the number varying to suit the haul, and a ten-hour day was worked. The labor prices were as follows:

1 three-horse snap team at	$5.00
1 three-horse plow team at	7.50
1 foreman at	3.00
2 scraper loaders at	1.75
1 dumpman at	1.75
Two-horse scraper teams at	5.00

Table I shows the cost of wheel-scraper work for a period of eight days. In this table the figures showing number of scraper loads, the cubic yards excavated, and the total daily cost are those given by Messrs. Dodge & Day; the figures of average scraper load and cost per cubic yard have been computed. The column of average loads indicates that the total

TABLE I—Showing Cost of Excavation by Wheel Scrapers and Plows for Railway Siding at Homewood, Pa.

Date.	Weather.	No. of Scraper Loads.	Total Cubic Yards.	Average Load Cu. yds.	Total Cost.	Cost Per Cu. yd.
September 11.	Fair	352	141	0.401	$38.07	$0.270
September 21.	Wet and muddy	352	141	0.401	38.07	0.270
September 22.	Wet and muddy	576	230	0.399	60.70	0.263
September 24.	Fair	572	229	0.401	50.84	0.222
September 25.	Fair	528	221	0.399	59.74	0.283
September 26.	Fair	580	232	0.400	56.04	0.241
September 27.	Fair	473	189	0.399	44.07	0.233
September 28.	Fair	473	189	0.399	57.18	0.302
Totals		3906	1562	.....	$404.71	.....
Averages		....	....	0.39975	......	.....
		$0.26505*				

* This figure is obtained by dividing the sum $2084 of the figures in the last column by eight, the number of items. By dividing the total yardage handled into the total cost we get $404.71 ÷ 1562 = $0.2584.

yardage was calculated by multiplying the number of scraper loads by four-tenths cubic yards, which, according to Gillette's "Hand Book of Cost Data," is about the average load "place measure" of No. 3 wheel scrapers.

Koppel Car Work.—The dump-car work was in a wide cut and borrow pit; the average depth was about five feet. About one-third of the material was a hard, gravelly clay which could be plowed only by a three-horse rooter plow. All material was plowed and shoveled into the cars. The average shovel gang was four men to a car. Koppel twenty-four-inch-gauge portable track was used, with the same firm's standard double side-dump cars of one cubic yard capacity each. The cars were operated in two trains of four cars each. The car dump was on a light trestle averaging about twenty feet in height, constructed of round timber cut in the vicinity. The main track from the car dump led down into the pit with temporary spur tracks, branching off over the bottom. Plowing was done on both sides of these spur tracks. The average haul was six hundred and fifty feet and a four-car train was easily handled by one horse. A ten-hour day was worked. The labor prices were as follows:

1 foreman at	$3.00
1 plow team at	7.50
1 one-horse team at	3.00
3 dumpmen at	1.65
Trackmen at	2.00
Laborers at	1.65

Table II shows the cost of the dump-car work for a period of fifteen days. In this table the costs per cubic yard have been computed and the other figures taken from the records furnished us. It may be noted here that these costs include the cost of building the trestle.

TABLE II—Showing Cost of Excavation by Koppel Cars and Shoveling for Railway Siding at Homewood, Pa.

Date.	Weather.	No. of Train Loads.	Total Cubic Yards.	Average Load Cu. yds.	Total Cost.	Cost Per Cu. yd.
September 11.	Fair	50	162	3.25	$42.70	$0.263
September 12.	Fair	55	179	3.25	48.31	0.269
September 13.	Showers	30	128	3.25	21.07	0.164
September 14.	Very wet	62	200	3.25	41.48	0.207
September 15.	Fair	58	189	3.25	41.16	0.217
September 17.	Fair	70	227	3.25	50.61	0.223
September 18.	Very hot	65	211	3.25	49.00	0.232
September 19.	Very hot	73	237	3.25	51.17	0.216
September 21.	Wet and muddy....	48	156	3.25	56.12	0.359
September 22.	Wet and muddy....	48	156	3.25	55.16	0.353
September 24.	Fair	57	185	3.25	44.63	0.241
September 25.	Fair	68	170	2.50	43.19	0.254
September 26.	Fair	72	180	2.50	46.18	0.256
September 27.	Fair	68	170	2.50	45.73	0.269
September 28.	Fair	68	170	2.50	56.74	0.334
Total and average............		892	2720	....	$693.25	$0.2556

Note—Referring to the cost of 35.9c. on Sept. 21 and of 35.3 on Sept. 22 Messrs. Dodge and Day remark that "these were so much higher than the others that they tend to show some error in the foreman's report as turned in or else some unusually unfavorable condition. For this reason it appears fairer to leave them out altogether."

More Decisions Affecting Architects and Builders

Contract for Granite to Be Satisfactory to Architect.—Where a building contract provides that "all granite must be equal to the samples which the contractor has submitted to the owner and must be satisfactory to the architect," that "payment will be made in full within thirty days after the granite has been delivered and accepted by the architect," and that all granite not satisfactory shall be removed, even though it may have actually been put into the building, an acceptance by the architect must be proved in order to entitle the person who furnished the granite to recover the contract price therefor, unless it is shown to have been refused through fraud, such a gross mistake as would imply bad faith, or failure to exercise an honest judgment. It is entirely competent for the parties to a contract of this kind to make it a term of the contract that the decision of an architect, engineer, or other officer as to all or specified matters of dispute that may arise during the course of the work shall be final and conclusive, and that, in the absence of fraud or gross mistake, such decision will not be subject to the revisory power of the courts. Standard Construction Company vs. Brantley Granite Company, Supreme Court of Mississippi, 43 So. Rep. 300.

Liability of Surety on Building Contract.—A firm of builders entered into a contract under which they agreed to erect an apartment house. A surety company became surety in the sum of $3000 and guaranteed the faithful performance of the contract. After the execution of the contract one of the partners in the building firm withdrew from the firm, assigned his interest to one of the other partners and was released from liability on the contract for the construction of the apartment house by the other party thereto. This was done without notice to the surety company, and the company, upon being notified, refused to ratify the release. In an action brought against the surety company to recover upon a liability which accrued in the performance of the contract, it was held that the release of one of the partners acted as a release of the surety company also. The change in the personnel of the firm constituted a material alteration of the surety's obligation and discharged it from liability. The rule is that a surety is only bound to the extent and in the manner and under the circumstances he consented to become liable. Friendly vs. National Surety Company, Supreme Court of Washington, 89 Pac. Rep. 177.

Liability of Architect on Promise to Pay for Services in Securing Loan.—An architect having been employed to draw the plans for a building and to superintend the construction, offered to pay a commission to the agent of a trust company, if the latter would procure a loan from the company to the employer of the architect so as to enable him to build. The agent failed to secure the loan and the employer obtained the necessary funds elsewhere. Later the architect promised to pay the agent the sum of $175 for services rendered, and the agent sued to recover this sum. It was held that such a contract would not amount to trafficking in the profession of the architect and was not void as against public policy. While it is true that the architect was looking to the furtherance of his own interests, for he would be entitled to no compensation unless the building was erected, he was also advancing the interests of his employer, who could not build without obtaining the loan. But it was held further that the agent could not recover for the reason that he had not obtained the loan according to the agreement and the architect's promise to pay him a certain sum thereafter was, therefore, not based upon a consideration. McCrary vs. Thompson, Kansas City Court of Appeals, Missouri, 100 S. W. Rep. 535.

Some Interferences of the Architect

AMERICAN schools of architecture may be said to have passed their nonage, according to the recent report of a committee appointed by the American Institute of Architects to investigate American architectural education. This report, declares the New York Tribune, "will convince the most skeptical that, in spite of much loose talk about the marvels of European architecture and the skill of foreign architects, our own country takes the lead in an all-round comparison.

"Most flattering of all is the assertion of the committee that architecture is being taught in America with a broader view and in certain respects more effectively than in any other country, and that in a few years the education offered in this country might be looked upon as final, except for the absolutely necessary element of study and cultivation through travel and research. The Tribune is forced to confess that its joy is still alloyed by the reflection that the American patron is one whose education has not gone forward commensurately with that of the American architect, and who consequently has it in his power to defeat all that the most highly trained products of the schools can devise.

"Without depreciating in the least the great achievements and even greater ambitions of our architects, it is probably true that America is forging to the front largely because opportunity makes the man. Nowhere in Europe has there even been such an enormous volume of building going on for a long period as in the United States. The unique feature about American construction is its diversity; everything, from the smallest, cheapest cottages and tenement houses up to Newport palaces and fifty-story office buildings, has been called for and delivered. If practice makes perfect, the American architect of the next generation ought to be the peer of his most distinguished foreign predecessors. Only one small cloud in the sky warns against our uttering this statement in the form of a positive prophecy; the cloud has the form of a man who has just made up his mind to build. European architects are far less hampered than their American colleagues by clients who insist upon putting fireplaces in the butler's pantry and running a three-story veranda around their city house. Before the American can outstrip his transatlantic brethren in every respect, he must first educate a large, crude, money-spending part of the population to respect his professional judgment more than their own in matters architectural. Be it said to the country's credit, a great many persons have already learned this lesson, as hundreds of beautiful town and country houses erected during the past decade prove.

"The public will best be taught to respect the architect as an expert by having before its eyes constant reminders of the artistic and practical genius of high-grade architects. To increase the number of such designs is the first ambition of the committee. This is to be accomplished, according to the report, by the establishment of a post-graduate school where gifted students may work in close personal touch with able masters. Let us hope, though, that long before such a school shall have been established the ordinary man will at least have learned to abhor the gingerbread monstrosities and the brick boxes which still pass for houses and flats in many quarters."

* * *

Patience is the rope of advancement in all lines of life.

* * *

If the mind is clear, even in a dark room there will be radiance; if the thought is dark, at noonday there will be demons.

Among the Architects

American Institute of Architects

(ORGANIZED 1857)

OFFICERS FOR 1907:

PRESIDENT.....................*FRANK M. DAY, Philadelphia, Pa.
FIRST VICE-PRESIDENT........*WILLIAM B. MUNDIE, Chicago, Ill.
SECOND VICE-PRESIDENT......R. CLIPSTON STURGIS, New York.
SECRETARY AND TREASURER..*GLENN BROWN, Washington, D. C.
AUDITOR FOR TWO YEARS.....ROBERT STEAD, Washington, D. C.

Board of Directors for 1907

For Three Years—Walter Cook, New York; Edgar V. Seeler, Philadelphia; J. L. Mauran, St. Louis, Mo.

For Two Years—Alfred Stone, Providence, R. I.; Irving K. Pond, Chicago, Ill.; Ralph Adams Cram, Boston, Mass.

For One Year—W. A. Boring, New York; J. M. Donaldson, Detroit; Merritt J. Reid, San Francisco.

*Executive Committee.

Next Convention at Chicago, Illinois

San Francisco Chapter of American Institute of Architects

PRESIDENT.............................ALBERT PISSIS
VICE-PRESIDENT..................WILLIAM MOOSER
SECRETARY................SYLVAIN SCHNAITTACHER
TRUSTEES...................... HENRY A. SCHULZE, WILLIAM CURLETT

Southern California Chapter.

Officers for 1906-1907.

PRESIDENT.............................MYRON HUNT
VICE-PRESIDENT.......................C. H. BROWN
SECRETARY...................FERNAND PARMENTIER
TREASURER..................AUGUST WACKERBARTH

Board of Directors

A. F. ROSENHEIM OCTAVIUS MORGAN
J. LEE-BURTON

San Diego Schools

Several new school buildings are to be erected at San Diego as a result of a sale of bonds for that purpose. They will comprise a building at Second and University avenue to cost $75,000; additions to the Middletown buildings, $60,000 and a building at Twelfth and F streets, $90,000. The latter building will contain eighteen rooms. It will have a frontage of 288 feet on Twelfth street and 188 feet on F street. The plans include a court 175 by 160 feet.

The Board of Education will commence construction work at once on a sixteen-room structure at Second and University from plans by Henry Lord Gay, architect.

Los Angeles Architects Meet

Further amendments to the city building ordinances are favored by the architects. At the last regular monthly meeting of Southern California Chapter, A. I. A., a committee consisting of R. B. Young, A. F. Rosenheim and Theo. A. Eisen rendered a report favoring the use of hollow terra cotta blocks for interior and exterior court walls and for partitions and filler walls in building construction, the thickness to be not less than one-twentieth the height of the wall. The use of hollow terra cotta blocks was also favored for residences, but not to exceed a height of thirty feet. The report of the committee was unanimously adopted.

Members present were A. F. Rosenheim, president; Fernand Parmentier, secretary; Robert F. Train, F. G. Brown, R. B. Young, Frank D. Hudson, J. Lee Burton, Timothy Walsh, S. Tilden Norton, Octavius Morgan, A. B. Benton, Theo. A. Eisen, August Wackenbarth and Julius V. Krause.

A motion was made and passed unanimously that J. N. Preston, one of the oldest members of the chapter, now 76 years of age, be made a life member of the local organization. A committee was appointed to draft resolutions on the death of E. F. Kysor, a pioneer architect of Los Angeles, and member of the firm of Kysor, Morgan & Walls.

Concrete Contractors Meet

The annual meeting and banquet of the Concrete Contractors' Association of San Francisco was held Saturday evening, August 24th, with a large number of members present. In the absence of President Keatinge the chair was filled by Vice-President J. D. Bluxome, who acted as toastmaster. He outlined the needs and obstacles which confronted the association in its efforts to assist the rebuilding of San Francisco. His remarks were received with long-continued applause.

Several other members contributed valuable suggestions and an excellent understanding was developed. John Faubel, who had just returned from an extended tour of inspection in the East,

gave an instructive address on the latest methods in connection with the employment of concrete observed on his journey.

The banquet was prolonged until the early hours, and a unanimous resolution was adopted that semi-annual meetings, followed by a feast, should be held later.

Harriman May Erect Big Office Building

E. H. Harriman was kind to the reporters on the occasion of his recent visit to the coast. Regarding conditions in San Francisco, the big railroad magnate had this to say: "Nothing can keep San Francisco back. She is bound to grow. But what is needed just now to hasten rebuilding and reconstruction is the leadership of some able, unselfish, energetic man. With so much destruction here, it is impossible for local capital to be sufficient for the work of rebuilding. San Francisco must have outside money. To inspire the confidence necessary to bring that capital here, the citizens must, by their conduct and by the reputation of their leaders, give assurance of stability and safety. Capital must have proper protection, or it will not come.

"The Harriman lines have no big office buildings in cities tributary to them. The erection of such big office buildings has been against the policy of the roads. Notwithstanding this general policy, I think that within a year, we shall have a big office building of our own in San Francisco. At least, I am strongly of that opinion now, and it will come, unless I should happen to change my mind."

A Big Loss

Grath & Duhammel, contractors for the Seattle federal building now nearing completion, will lose approximately $100,000 by the two years delay in the construction of the building, says a press dispatch. Nearly every item involved except the steel work, which is had by contract, has cost the contractors more than their estimates covered. Teamsters are being paid 60 per cent advance over the original estimates. Other advances have been bricklayers, $1.00 per day; stonecutters, $1.60; plasterers, $1.50.

A rigid government inspection has rejected enough stone to build two buildings the size of the federal building, but most of this loss falls upon the quarry. The building contractors were delayed by a regrade of Third avenue, and a fight over the acceptance of Chuchanut sandstone, both of which causes led the government to order work stopped. More than a year's loss of time is traceable to the treasury department. The building is to be completed about the first of the year.

Church of the Messiah

Architect A. B. Benton is preparing plans of a chapel building to be erected at the corner of West Washington and Van Ness avenue for the church of the Messiah. The style is Perpendicular Gothic and the construction throughout will be brick and brick and half timber. It will cover a ground space of 48 by 77.6 feet. The nave will be 29.2 by 50.2 feet; chancel 20 by 50 feet; primary department 17 by 37.6 feet; vestry 12 by 18.6 feet. The combined seating capacity of the nave and gallery is 300. There will be a basement under the entire structure and will be devoted to Sunday School room, ladies' parlor, kitchen, furnace and choir rooms, etc. The large open terraces will have cement floors. Cathedral and leaded glass windows, pine trim and a thorough system of heating and ventilating will be installed.

In addition to the foregoing there will be erected at an early date, the main church edifice which will be connected by an underground passage.

San Jose Normal School

President Maurice Dailey of the State Normal School, San Jose, is in receipt of the first drafts of the plans for the new Normal building. These have come from the office of the State Architect in Sacramento and are for Professor Dailey's approval and amendment.

The new plans show that the Normal building is to be built around a quadrangle, upon which the offices and class rooms will open. The arches which will afford entrance to this square will be in the mission style with rounded capitals. Around the quad will be corridors like cloisters, also in the mission style. The height of the building will be from one to two stories.

It is said that the State Engineering Department is desirous of commencing work on the new building as soon as possible, the intention being to have it ready for occupancy by this time next year.

New Hospital

Oakland is to have another hospital, which is to be erected in Forty-ninth street, between Telegraph avenue and Broadway. It will be known as the Claremont hospital, and is to be erected by and under the management of the Claremont hospital association, of which Dr. H. G. Thomas is the president and Dr. E. N. Ewer, health officer of Oakland, is secretary. The hospital will cost $130,000. McCall & Wythe are the architects.

Stockton Bank Building

Bids are being taken by architects Meyers & Ward for an eight-story bank building to be built at Stockton by the Stockton Savings & Loan Society. The building will have a steel frame and will be faced with brick and terra cotta. The three upper floors will be handsomely fitted up for the Yosemite Club. The building will cost $150,000.

Architect Sues Storage Company

Architect R. C. Shindler of San Francisco has brought suit against the Bekins Van and Storage Company for $11,158.20, the claim arising out of the destruction in the conflagration of architectural books, plans, etc., which the defendant company had in storage. Shindler claimed that he paid the company $13.20 to insure the books and plans for $1000, but that after the fire the company informed him that they had not insured them. The destroyed goods were worth $11,158.20.

Architect Undergoes Operation

Thomas J. Welch, architect, member of the architectural firm of Welch & Cary, San Francisco, and known throughout the State as Grand Lecturer of the Knights of Columbus, is at Mount Zion Hospital, rapidly recovering from an operation performed by Dr. T. E. Bailly.

Popularity of Reinforced Concrete in San Francisco

(From a Leading Sacramento Daily.)

John B. Leonard, C. E., one of the best known authorities on the Pacific Coast in reinforced concrete, is registered at the Golden Eagle Hotel from San Francisco. Mrs. Leonard accompanies him. While in Sacramento, Mr. Leonard will attend the Irrigation Congress which presents some engineering problems of exceptional interest to the profession. In the rebuilding of San Francisco, Mr. Leonard has taken an active part, having designed the reinforced concrete features of no less than a score or more prominent structures.

There has been little if any concrete construction work in Sacramento, up to the present time, but those who are informed predict the early use of the material in at least one instance—the new Subscription Hotel.

"The popularity of reinforced concrete construction in San Francisco has exceeded all expectations," said Mr. Leonard, in an interview with a reporter. "At first some of the leading architects hesitated to recommend concrete to their clients, but after the possibilities of the material were made apparent by repeated successful demonstrations, those men took to it more kindly, and the result has been that there is today hardly an architect of any prominence in San Francisco or Los Angeles who has not turned out one or more substantial concrete buildings.

"The chief opposition to concrete has come from the brickmen, who see in it some formidable competition. Reinforced concrete is no longer an experiment. Failures are no more liable to occur than in brick buildings, provided the plans and construction work are carried out under the intelligent and strict supervision of competent engineers. No superstructure of any building, no matter how well built, can prevent a failure if the substructure contains faulty elements. Nearly all buildings of San Francisco have concrete foundations and in fact, had them before the fire, and as these foundations remained intact, they have carried conviction of the reliability of the material.

"Concrete buildings have failed, so also have steel and brick buildings, but in every case, the failure was traceable to a flagrant violation of the fundamental principles of construction. There is no existing data showing that a properly designed and constructed concrete building does not possess all of the merits claimed for it. It certainly offers to the investor a cheaper construction with equal or superior durability and the same income producing ability.

"There is one economic advantage in the use of reinforced concrete here in California, in that it leaves a much larger per cent of money invested in the construction of a building in our own state. The sand, gravel and rock together with the ingredients necessary to manufacture Portland cement, are all found within the boundaries of this great state, and are being utilized."

Johnston-Newman

Announcement is made of the marriage of Miss Cavie A. Johnston and William A. Newman, architect, which took place on Saturday evening, August 31st, at the home of the bride in Elmwood Park, Berkeley. Miss Johnston is the charming daughter of the late R. C. Johnston, pioneer mining man of Seattle and late president of the Alaska Development Company. She is a former student at Miss West's school in San Francisco and also of the University of Washington. Mr. Newman is a San Francisco architect, who has designed some pretty homes on Oakland side of the bay. In 1905 he was appointed by the Secretary of the Treasury as superintendent of construction and has been for the past eight years connected with the erection of federal buildings in San Francisco. He is a member of the Masonic fraternity in Oakland and a former student at the University of California.

They will be at home to friends, after September 20th, at "The Lawrence," 324 Grand avenue.

THE
Architect and Engineer
OF CALIFORNIA

Published Monthly in the interests of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by the Architect and Engineer Company.

SAN FRANCISCO AND LOS ANGELES

OFFICES
621 Monadnock Building - San Francisco
Telephone Temporary 1928
142 Broadway, Los Angeles Phone, Home 5747
423 Lumber Exchange Building, Portland, Or.

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

Vol. X. SEPTEMBER, 1907 No. 2

A PLEA FOR EXPERT SUPERVISION OF REINFORCED CONCRETE

Along lines which have been repeatedly outlined and advocated in this magazine the International Society of Building Inspectors, through its executive officer, Architect F. W. Fitzpatrick, has begun a vigorous campaign for competent supervision of reinforced concrete buildings throughout the United States. We agree with Mr. Fitzpatrick that no class of construction calls for greater expert authority and to this end the International Society is making every possible effort to induce cities to appoint special inspectors of concrete and to otherwise protect the people from an indiscriminate use, by incompetent persons, of this particular type of building material.

It may not be generally known that the United States Government, through its geological Survey experts, has issued a warning to the people in a widely scattered report sent out to the press. In part the report states that the recent collapse of a number of reinforced concrete buildings, with loss of life and several hundred thousand dollars, has brought forcibly to the attention of construction material experts the need of an immediate revision of the building regulations of the great cities of the country. It is declared that inattention to this new material on the part of officials of municipalities and the haphazard manner in which it is being handled by some contractors, has led to a most serious problem and will result in more disasters unless there is a remedy at once.

The government expert declares that the danger of collapse of concrete structures exists in nearly every important city of the United States.

"I have examined carefully nearly every one of the buildings that have collapsed in the past year," says this expert, "and in every instance the fall of the structure has been due to carelessness in construction. I am satisfied that the same errors are being

repeated and that further collapses will surely come unless the officials of the cities take the question in hand now. This danger of careless construction confronts nearly every city of the country and it is a miracle to me that more concrete buildings have not collapsed. In order to meet this problem squarely every city should revise its building laws in such a manner that either the owner or the contractor of a concrete building shall be compelled to employ a competent inspector, whose duty it shall be to follow every detail of the construction from the beginning of the foundation to the completion of the roof."

HOW SHALL AN ARCHITECT GET WORK?

How should an architect get his work? It is a serious question that each beginner has to ask himself. There is but one answer, and that is: he must be "known of men." But this hardly helps, as it simply causes the query to be changed so as to read: How may an architect make himself known? In a certain number of cases the answer comes naturally, and in course of time: the draughtsman who is of the right stuff to make an architect, and who has proved himself of exceptional value to his employer, is taken into partnership, and his name thenceforward becomes as well known as that of his partner. But the men who become known in this way are usually men who, though capable and well educated, have to depend on their daily wages, and so are rather forced to graduate from the bench, as it were. But there are others willing to take more risks, perhaps, more confident in their real powers, or, happily, possessed of independent incomes, who do not care to wait to be known until middle-age overtakes them, but wish to gain name and fame—and money—while young. How shall these be known?

They cannot advertise in a commercial way as can business men, since it would be "unprofessional," and such advertising as can legitimately be done on a door-plate is not likely to be very productive. If they are unwilling to adopt the old-fashioned course of establishing themselves in some new community, growing up with it, becoming known therein by daily intercourse with their fellow-citizens, and satisfying their needs as they develop, then there are only three ways open: To make an alliance with a speculating builder; to seek success by constant participation in competitions of all kinds; or, frankly, to tout for work.

According to the American Architect the first of these three methods is extremely dangerous, as it almost inevitably leads to a lowering of the moral tone and a debasing of artistic and ethical standards; the second is absolutely professional, and, in spite of the manner in which established architects talk against the method, is altogether too good ever to be abandoned. As to touting, there is much more of it done than architects will be ready to admit, for methods of touting are almost as various as men are numerous, and methods one man would employ would be scorned by his neighbor; and yet most of the methods actually used are permissible, decent and professional. The method that is at once the most legitimate and most successful is social touting, which consists simply in mixing with one's fellow-men as often and as widely as possible through membership in one or more clubs, in becoming an active member of a church congregation, and in taking part in such social functions as are accessible.

But when all is said, the best agency for becoming known—the one that has had an effective part in the upbuilding of every architectural reputation in these days—is nothing more nor less than the printing-press. It is the legitimate advertising given, without pay, by newspapers, magazines and professional periodicals.

The Publisher's Corner

A Place to Store Building Material

Contractors or members of the trade desiring first-class storage facilities can be accommodated by the North Point Warehouse Company whose office and warehouses are at Mason and Bay streets, San Francisco. This company makes a specialty of storing building materials and has over 36,000 square feet of room under cover in addition to more than one-half block of storage land. Excellent railroad facilities are provided, there being a private spur track connecting branch lines of the Southern Pacific, California Northwestern, and the Santa Fe. There are also very good wharfage accommodations. This company carries in stock some 8000 or 10,000 barrels of lime ready for immediate shipment. F. L. Lathrop is the manager.

Sullivan's Plank Holder

Architects and engineers will find much useful information in an interesting booklet just issued by J. H. Sullivan of Grand Rapids, Mich., and which is descriptive of Mr. Sullivan's Patent Steel Plank Holder, showing various methods for use in constructing concrete work of all kinds. The book will be mailed free for the asking.

The plank holder can be used in connection with any of the well known brands of steel reinforcements. The plank holders are made in two sizes, for planks 1⅞ inches thick, and for ⅞ inch boards; other sizes if desired. The size for 1⅞ inch planks are those best adapted for all classes of concrete work, where it is necessary to use planks for sides and ends. The small size, for ⅞ inch boards could be used to advantage for light contracting.

Inspection of Structural Material

Engineers, architects, contractors and owners should realize the necessity and advantage in having structural steel for buildings and bridges inspected before shipment is made by the manufacturer.

Too much care cannot be taken in the mill to see that the physical and chemical requirements are lived up to, and the material used is free from any injurious defects, such as laminations, snakes, brick marks, pits, cinder spots, cold steel rolled in, etc., and that the specified dimensions and weights are complied with.

In the shop the work should be supervised during marking, punching, reaming, assembling, riveting, machining, cleaning, painting and weighing. By detecting errors and rectifying them in the shop serious delays and great inconveniences are avoided, especially when consideration is given to the fact that the material has to be transported 3000 miles, and if errors are not discovered until arrival at destination, it will readily be seen that the delay thus caused would be a very serious item.

The American Bureau of Inspection and Tests, whose general offices are in Chicago are prepared to inspect this class of material.

They have inspectors stationed at most of the important mills and bridge shops throughout the country and are in a position to handle orders of any size at a minimum cost to their customers. Woods & Huddart of No. 11 Front street, San Francisco, are the agents for this company.

Carbonizing Coating

Carbonizing Coating can hardly be classed with paints; it is something more. It has given protection where ordinary good paint has completely failed. Why? Because it is made of chemically pure materials, and manipulated in such a manner that uniform and reliable results are obtained. The vehicle is chemically pure linseed oil, with which are combined time-tried staple pigments; the combination cannot be other than durable.

Carbonizing Coating is made for one purpose only, viz., the protection of iron and steel from rust and corrosion. It is adhesive, and completely seals the metal from moisture and other oxidizing influences. It is not a new "patented" product, but one that has been in use for years, demonstrating its value as a protective paint.

The McCormick and Henderson Company, with offices at 110 Bush street, near Kearny, are the San Francisco agents for Carbonizing Coating and they have also taken the agency for an office building directory of the most improved pattern.

Hamilton Grate Company Moves

The Hamilton Grate Company has removed its Oakland office and factory from 177 and 179 Twelfth street to more elaborate quarters at 271-273 Twelfth street. A fine large display room is a feature of the new quarters. The company has established a San Francisco office at 430 Monadnock building. A steady increase of business necessitated the above mentioned changes. William C. McGeorge is manager of the sales department.

Prominent Cement Man Returns

Max Goldsmith, vice-president of Maldonado & Company, whose San Francisco offices are in the Hansford building, 268 Market street, has recently returned from a trip abroad. He was agreeably surprised to note the headway made in rebuilding the city during his absence. In no one city in the world is there so much reinforced concrete construction going on as in San Francisco, he says. While abroad Mr. Goldsmith visited all the great cement plants which he found taxed to their capacity. The local consumption of cement has exceeded all expectations and in consequence foreign cement is likely to be much higher here next year. The cement being sold here now is largely an accumulated stock and was shipped when there was less demand for it at home. Mr. Goldsmith says it is unfortunate that the authorities have allowed to be shipped here several cargoes of poor cement which had been rejected in Europe. This cement has been used in San Francisco buildings and experts have predicted serious trouble at no distant date.

The two brands carried by Maldonado & Co. are the Lion and the Hammonia. The latter was used in the Fairmont Hotel and the Lion is being used exclusively in the construction of the big apartment house designed by Architect Frederick Noonan and being built on Sutter street, near Polk, San Francisco.

The Ettler System of Concrete Reinforcement

Architects and builders have manifested considerable interest in the construction of the Owl building on Mission street, near Second, San Francisco. The Ettler system of reinforcement is being used and the author explains its merits and advantages in a letter to the Architect and Engineer, as follows:

"The form of mesh in the network of steel is triangular, which can not be distorted. The bars of which the network is composed are flat, punched at regular intervals and are nailed together at the intersections. By this method internal stresses in the concrete are obviated. The steel work can be erected altogether in advance of other work and does not need immediate filling of concrete, as the same forms a complete unit and stands well alone.

"The construction remains open for inspection for several stories and defects can not escape detection. In the filling in of concrete, a disarrangement of the meshes is imposible in this system."

Mr. Ettler says his system has been approved by some of the most eminent authorities in the world, including Prof. T. Nakamuro, a prominent engineer of Japan.

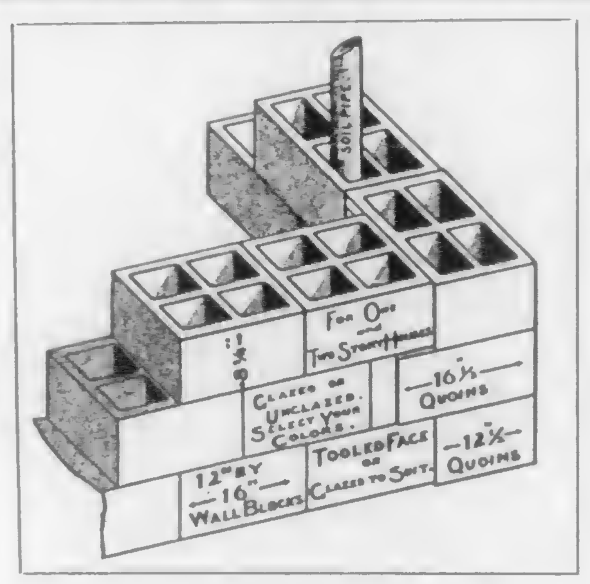
Ornamental Plaster Work

J. E. Manetta, the well-known sculptor and stucco man, has taken into partnership Mr. Callahan whose experience in the same line of business has covered several years. Both have been eminently successful and under the new firm name of Callahan & Manetta they are likely to enjoy continued prosperity. Important contracts for ornamental plaster work and modeling recently taken by the firm include the Italian-American bank, John Galen Howard, architect; the Mercantile Trust Company's building, Albert Pissis, architect; the Bank of Italy, Frank T. Shea, architect; and the Palace Hotel, Trowbridge & Livingston, architects. Mr. Manetta had the contract for all the elaborate stucco work on the new pavilion and casino at Santa Cruz, William H. Weeks, architect, and also the interior of the remodeled Hotel Vendome in San Jose. The new firm has arranged to open a down town office at an early date, retaining the studio and workshop at the foot of Bay and Fillmore streets, San Francisco.

State Fair Exhibits

A number of our enterprising advertisers made very creditable exhibits at the State Fair in Sacramento. The Henshaw-Bulkley Company had a big display of road tools, sprinklers and the Otto gas engines. Baker & Hamilton showed the Peerless gas engine, Simplex separators and the Burrell milking machines. Julius Beeman was in charge of an Alamo engine which attracted considerable attention.

FOR SALE—I. C. S. Bridge and Structural Engineering Course, including Text Books. Lessons direct from schools. Legal transfer. Can be had cheap for cash. Inquire 621 Monadnock Bldg.





RIPOLIN ENAMEL
for Economy and Effect
BAY STATE BRICK AND CEMENT COATING
Covers Cement in One Coat
RICKETSON'S COLORS
for Mortar and Cement

SPECIFIED BY LEADING ARCHITECTS
INFORMATION FURNISHED

Pacific Coast Agents

KLATT-HIRSCH & CO.

PAINTS, OILS, GLASS, VARNISHES, BRUSHES

PHONE, TEMPORARY 384. 113 Front Street, SAN FRANCISCO

THERE IS ONE

and only one way to get best results from the use of

PRISM GLASS

and that way is to specify Luxfer Prisms to be installed by the

AMERICAN LUXFER PRISM Co.

INGERSON & GLASER CO.
MANUFACTURING AND SALES AGENTS
245 OAK STREET, San Francisco, Cal.

Keystone Boiler Works

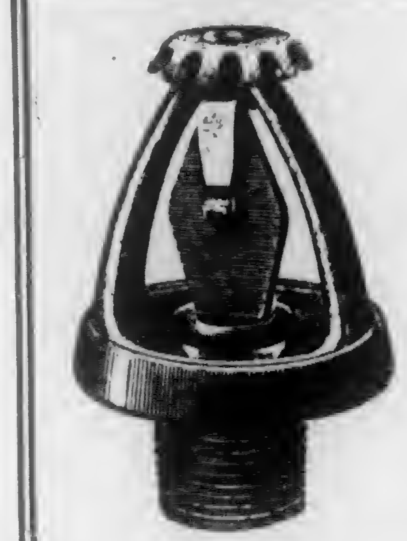
MAIN AND FOLSOM STREETS
SAN FRANCISCO

PACIFIC COAST AGENTS FOR THE

PARKER WATER TUBE BOILER

SELF CLEANING ABSOLUTE SAFETY GREATEST ECONOMY

WRITE FOR CATALOGUE



Pacific Fire Extinguisher Co.

Agents for Grinnell Automatic Sprinklers and Fire Alarm Systems. Insurance rates reduced 40 to 50 per cent. Recognized by all fire insurance companies. Estimates furnished free. Correspondence solicited.

PACIFIC FIRE EXTINGUISHER COMPANY

Office and Warehouse, 507 Montgomery Street
G. J. BECKER, Manager. SAN FRANCISCO, CAL.
Telephone, Temporary 3892

Residence: 1406 Filbert St.

D. ROSS CLARKE

Plastering and Cement Contractor

EXTERIOR CEMENTING DONE IN WHITE OR CREAM COLOR

Ornamental Plastering and Cement Plastering on Reinforced Concrete a Specialty

Box 258
BUILDERS' ASSOCIATION San Francisco

CEMENT TESTS

Complete Chemical and Physical Tests according to the Specifications of the American Society of Testing Materials and also

GENERAL CHEMICAL ANALYSIS
Accuracy Guaranteed

IRVING C. ALLEN

EXPERT CHEMIST
CONSULTING LABORATORY
BEACH AND MASON STS., SAN FRANCISCO
PHONE FRANKLIN 1052

WHITE BROTHERS

Importers and Dealers in

Hard Wood Lumber

Ship Plank and Oak Timber, Cabinet Woods, Veneers, Walnut, Primevera Oak, Hickory, Ash, Mahogany, Cherry, Spanish Cedar, Poplar, Maple, Etc.

S. E. Cor. Spear and Howard Sts.
SAN FRANCISCO, CAL.

O. M. BULLOCK

DESIGNER AND BUILDER

¶ Plans and Specifications Furnished ¶ Remodeling and Building a Specialty ¶ Get my Figures . . . .

1420 Broadway
OAKLAND, CAL.
Phone
Oakland 2538

HOYT BROS.

General Contractors

We are prepared to Contract Work in San Francisco and other Bay Cities as well as other portions of Northern California

Correspondence Solicited

Builders Exchange
San Francisco, Cal. Santa Rosa, Cal.

Home A 2157
Main 68

1323 Berendo St.
Res. Home B4843

MARK KIRKBY

PRACTICAL TILE AND SLATE ROOFER

Estimates Furnished. Complete Roofing Jobs

Agent for Akron, Ohio, Roofing Tile and Eureka Black Roofing Slate

Office, 226 Stimson Block LOS ANGELES, CAL.

Finishing Woods in Stained Effects

While today a great deal of wood work is still finished natural, a large portion is stained in various effects. Depending on the character of the finish desired, different stains are used with which it is possible to obtain almost any color.

All woods can be finished in such a variety of beautiful and artistic shades, that the architect has almost as many colors to choose from in stained wood effects as in paints.

In addition to this there are various finishes now in general use, such as varnish finish, which may be left in the gloss or rubber flat; or the mission finish—a flat waxed effect.

Where light colors are wanted, the wood filler may be tinted to the proper shade. For darker effects it is necessary to use stains in order to get the desired color and at the same time not cloud the figure of the wood.

The variety of beautiful and artistic effects it is possible to obtain on all wood, whether it be ordinary pine, birch or the finest mahogany, is a revelation to any one who has not looked into the subject and who does not know the possibilities in wood finishing.

There are few woods which "take" stain so well as California redwood and Oregon pine, and when properly treated these woods can be finished in a very attractive manner.

Every architect and builder who is desirous of thoroughly acquainting himself with the progress of the art and familiarizing himself with the many new shades that have been introduced, will be very much interested in an exhibit of finished woods which is shown in the offices of the Whittier Coburn Co., Los Angeles and San Francisco, where large finished panels of California redwood and Oregon pine, together with various hardwoods can be seen. It has been said of these panels:

"We are very much pleased with these samples, and in our estimation they are the finest of anything of the kind that has come to the coast."

"We consider these samples the most handsome, most effective and sales producing samples of this kind that have ever come to our attention."

The panels have been furnished by the Bridgeport Wood Finishing Co., manufacturers of Wheeler Patent Wood Filler, an article recognized by all architects as essential in preparing the proper foundation for finishing wood.

An Index to the Advertisements

New Advertisers Not Noted Here Will Be Classified Next Month



Detail of Flannery Building
Art Metal Canopy by Chr. Deterding — *Concrete Work by Victor Stanquist*
Ornamental Plastering by D. Ross Clark

Bars for Reinforced Concrete

Gilhuly & Ambler report an improvement in business the past month. This firm is located in the Atlas building at 604 Mission street, San Francisco, and handles the fabricated structural steel in addition to an excellent line of high carbon steel bars for concrete reinforcement. A number of good size orders for the carbon bars have been taken by this firm the past month largely on account of the excellent satisfaction the bars have given in buildings already erected.

Keuffel & Esser in New Quarters

The San Francisco store of the well-known firm of Keuffel & Esser, dealers in architects' and engineers' supplies, drawing materials, etc., is now located at 48 and 50 Second street. The new location is not only more convenient but the accommodations are much superior than those afforded in the old quarters at 40 Oak street.

Praise for Chr. Deterding

The handsome ornamental awning in front of M. Gunst's store in the Flannery building is receiving much favorable comment. It is an artistic bit of workmanship and Chr. Deterding, from whose art metal works the canopy was turned out, is naturally elated over the many words of praise his efforts have occasioned. Mr. Deterding makes a specialty of bank fixtures, elevator grilles, art forgings and hammerings. His shop is at 67 Clementina street, San Francisco.



Interior of Studio and Display Room of J. Fred Jurgewitz, Staff and Stucco Work, Oakland

American Pacific Company

The American Pacific Construction Company has moved its executive office to the Pacific building at the corner of Fourth and Market streets, San Francisco. This company is putting up the Pacific building and both the contractors and the architect, Charles F. Whittlesey, are constant recipients of congratulation for the speed and excellence with which this great enterprise has been carried on. The Pacific building has been truthfully termed the largest reinforced concrete building of its kind in the world.

———

The Spencer Desk Company has taken the contract for supplying the pews in the new First Presbyterian church in San Jose. The seats are to be handsomely carved and polished.

Fireproof Partition Walls

Architects and owners desiring to use first-class fireproof partition walls in the construction of fireproof buildings would do well to investigate the Hudson patent block which is being installed in the Fairmont Hotel by the Hudson Patent Block Company. The block is not only fire proof but is sound proof and germ proof and can be used at moderate expense. The system saves time and space and can be papered or distempered immediately after erection. Mr. Hudson will be pleased to call on any architect and explain the merits of his block upon receipt of a letter or postal inviting him to call or a personal investigation of the system may be made at the Fairmont Hotel.

Inspection Tests Consultation

Henry T. Scott, *President*
John F. Davis, *Vice-President*

E. M. C. Whitney, *Secretary*
John B. Leonard, *Engineer*

TELEPHONE - TEMPORARY 1928

Western Inspection Bureau

Steel Frames a Specialty

MILL, SHOP AND FIELD INSPECTION OF BRIDGE, BUILDING AND SHIP-BUILDING MATERIAL. TESTS OF IRON, STEEL, CONCRETE, RE-INFORCED CONCRETE, BRICK, STONE AND TERRA COTTA.
INSPECTION AND SUPERINTENDENCE OF CONSTRUCTION.

A FEW SAN FRANCISCO BUILDINGS RECENTLY INSPECTED BY US

			ARCHITECTS
Whittell Building	17	stories	Shea & Shea
Marston Building	8	"	Meyer & O'Brien
Quick Building	7	"	C. J. Colley
Station C (San Francisco Gas & Electric)			Wright & Polk
Berkeley Masonic Temple	4	"	Wm. H. Wharff
Whitney Building	8	"	J. R. Bowles
Alta Investment Bldg. (Bases)	8	"	J. E. Freeman
Alaska Commercial " (Stacks, Bases Tanks)	9	"	Myers & Ward
Metropolis Bank " (Bases)	15	"	L. B. Dutton
Johann Schmidt " (Bases)	10	"	Herman Barth
Oscar T. Luning "	3	"	Nathaniel Blaisdell

NO JOB TOO LARGE — NONE TOO SMALL

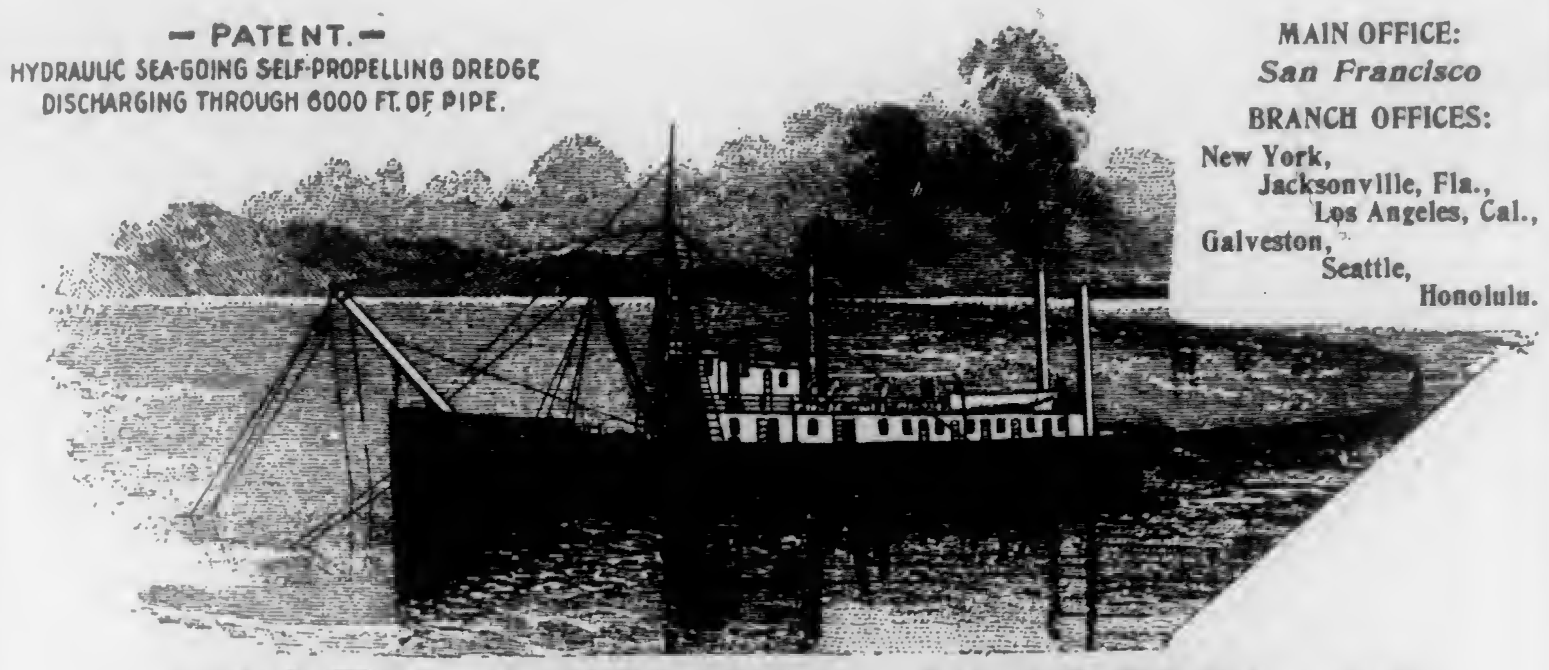
MAIN OFFICE:
621 MONADNOCK BUILDING
SAN FRANCISCO.

234 HELLMAN BLOCK
142 So. Broadway, Cor. 2nd, : : Los Angeles, Cal.
Home Phone 5747

Chicago *Pittsburg* *Philadelphia*

— PATENT. —
HYDRAULIC SEA-GOING SELF-PROPELLING DREDGE DISCHARGING THROUGH 6000 FT. OF PIPE.

MAIN OFFICE:
San Francisco
BRANCH OFFICES:
New York, Jacksonville, Fla., Los Angeles, Cal., Galveston, Seattle, Honolulu.



NORTH AMERICAN DREDGING CO.

GENERAL CONTRACTORS
AND ENGINEERS

HARBOR IMPROVEMENTS AND DREDGING MACHINES
OAKLAND, CALIFORNIA
BACON BUILDING, ROOMS 76-77-78 TEMPORARY OFFICES ACCT. OF S. F. FIRE

Jobbers of

Plumbing and Steam Supplies

Radiators, Boilers, Storage Tanks

Wrought Iron Pipe, Malleable and Cast Fittings, Brass and Iron Valves

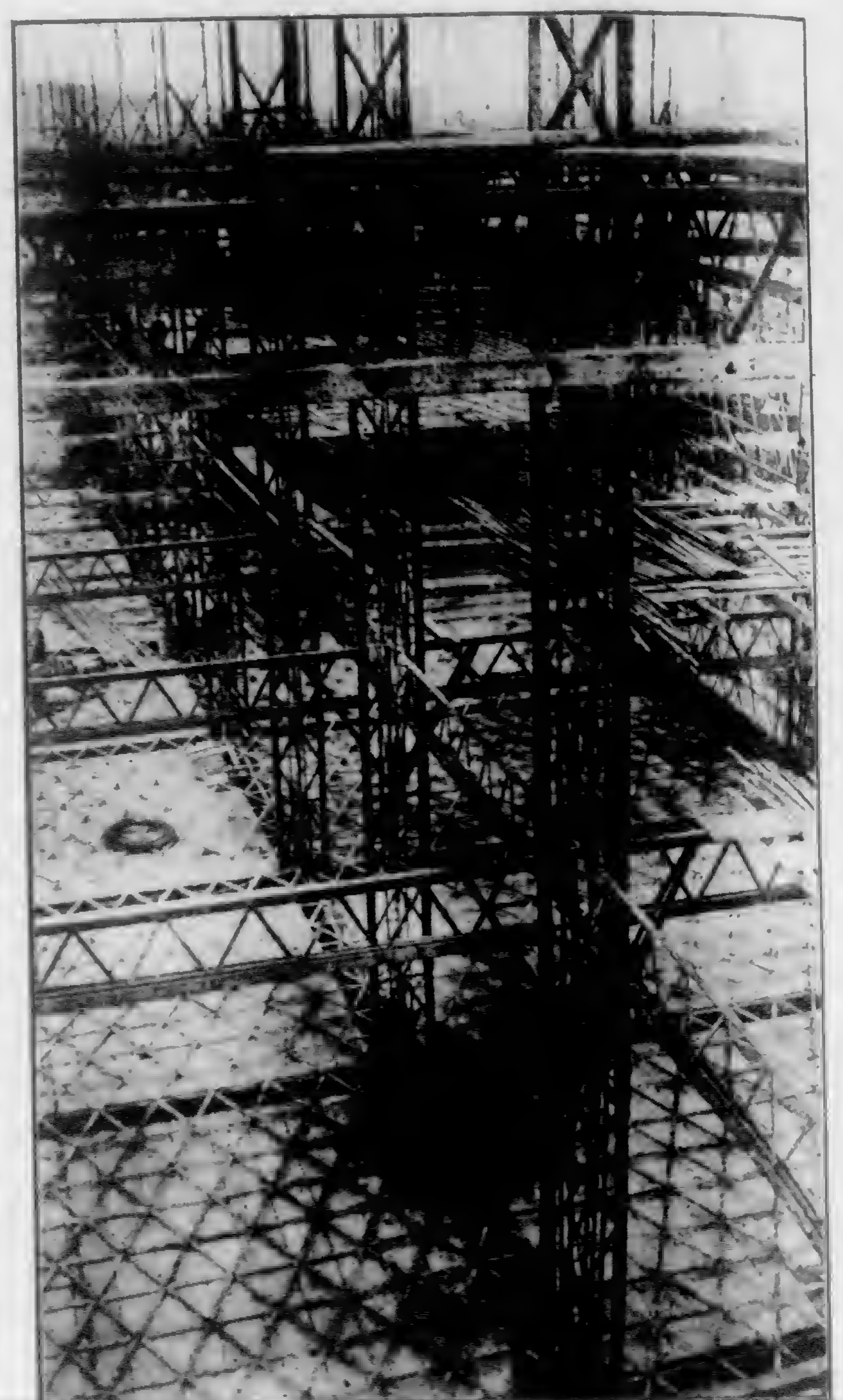
GEORGE H. TAY CO.

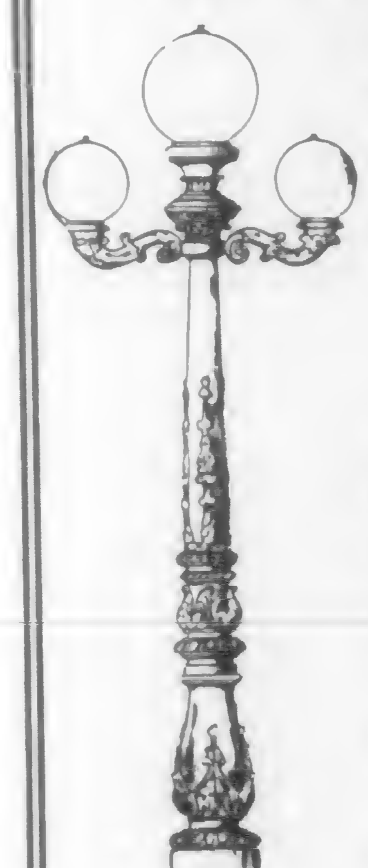
San Francisco, Office and Store 19th and Minnesota Sts.
Warehouse 20th and Indiana Sts. Telephone Market 1710

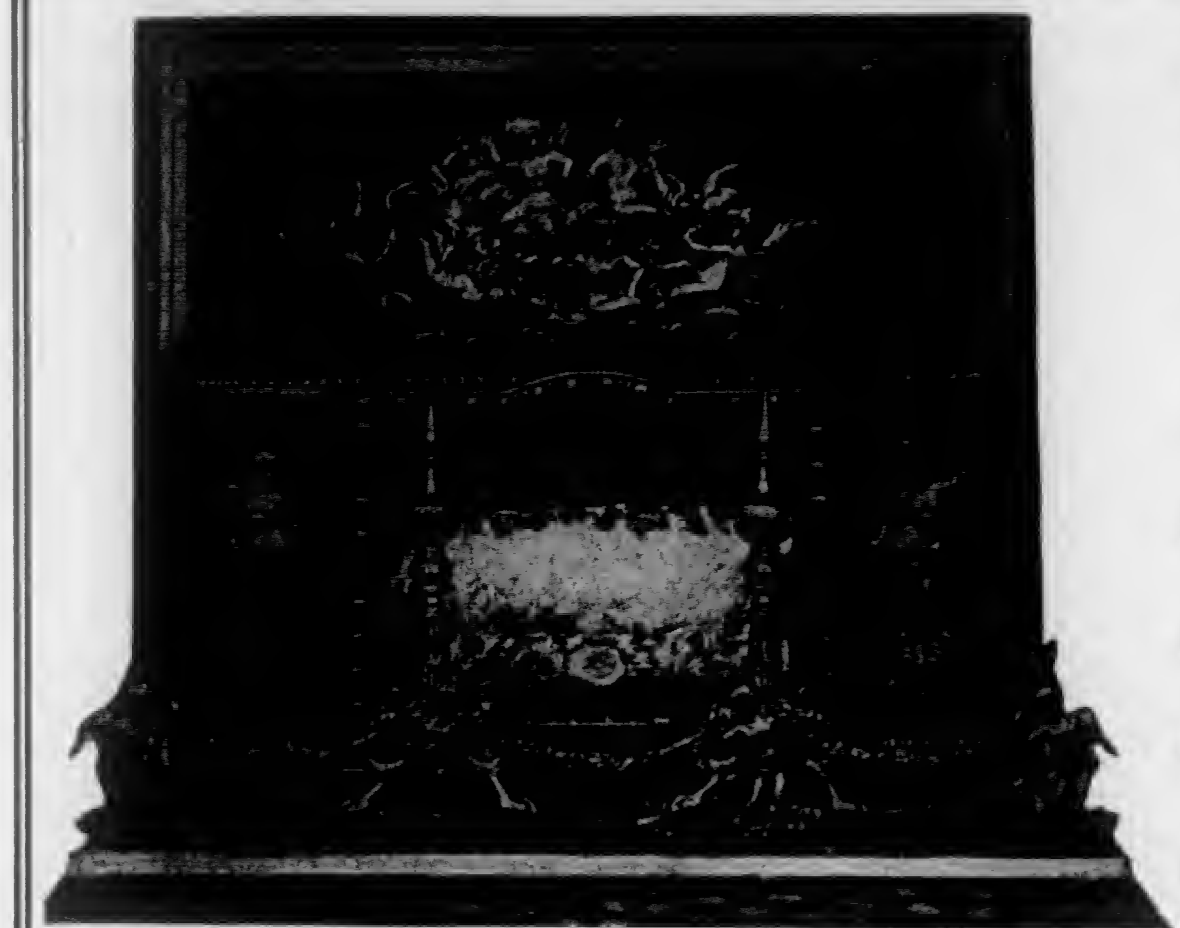
Opens Pacific Grove Branch

The Globe Electrical Company of Monterey has established a branch at 212 Forrest avenue, Pacific Grove. A fine line of electric fixtures will be carried in the new store besides an assortment of art goods for interior decoration. The Globe Company has wired practically ever·· new building put up in Monterey and vicinity this year.

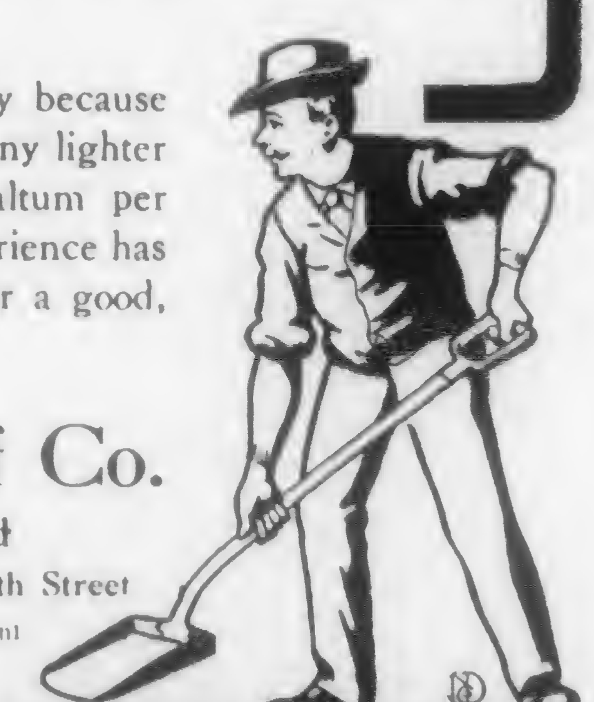
L. E. Stanhope, who has been representing the firm of Holabird & Roche, the well-known Chicago firm of architects, in San Francisco since the fire, has gone East on a few weeks' business trip.











The A. W. Reiber Company

The friends of Mr. A. W. Reiber, for five years head of the decorating department of the John Breuner Company, will be pleased to learn that he has branched out for himself. Associated with him, under the name of the A. W. Reiber Company, is Mr. W. C. Colson, a man of high business standing. With the ample capital which the firm enjoys, coupled with Mr. Reiber's wide experience, success would seem to be theirs from the start. Handsome quarters have been leased by the company at 1607 Broadway, close to the new Key Route Inn. An exceptionally large stock has been put in, Mr. Reiber having spent several weeks in the East selecting the assortment. The firm will carry the following lines, all of which have been gathered from the best sources in America and Europe: fabrics, wall and floor coverings, draperies and hangings, gas and electric fixtures, hardwood floors, imported and domestic rugs, art glass, etc. The aim of the company is "to attain the highest expression of art in home furnishing and to encourage an artistic appreciation."

Mr. Reiber is best known on the coast by his successful efforts in the decorative line, while with the John Breuner Company of San Francisco. During the five years he was in Mr. Breuner's employ Mr. Reiber supervised the furnishing of some of the finest homes in California including the residences of Mrs. Hermann Heynemann, Dr. O. C. Joslen, Mrs. S. Greenbaum and Mrs. L. W. Sanborn, San Francisco; J. H. Hunt, W. W. Garthwaite, and A. J. Snyder, Oakland; J. L. Chaddock, Mrs. O. E. Morris, Berkeley, and Dr. Robert Dunn, Piedmont.

Before coming to the Coast five years ago Mr. Reiber was associated with Wm. H. Prentice & Co. of Buffalo for four years and for fourteen years he was connected with the well-known house of Burke, Fitzsimmons, Hone & Co. of Rochester, New York.

A Strictly Fireproof Door

Fireproof doors and window sashes and frames are indispensable features which architects should not overlook in planning a fireproof building. So long as there is any wood in a building, whether it be in the doors, the stairs, the windows or even the furniture, that building cannot be called absolutely fireproof. San Francisco architects realize this more today than ever before and in specifying fireproof doors it is only right that they should patronize home industry first of all. Unfortunately, this has not been done as liberally as one might expect for the reason that Eastern material can be had for less money than the home product. But the so-called fireproof doors that are being shipped in here from the East are about as fireproof as a sheet of tar paper. They are cheaply made and positively will not stand a severe heat.

Of the few Coast concerns that have undertaken to supply the local market, none has achieved greater success than Fred Nichols, whose office and factory are at 1137 East Sixteenth street, Oakland. Mr. Nichols will not bid on cheap work, nor will be turn out a piece of material that he will not guarantee. Doors are manufactured by him for office buildings, stores and banks and they are covered either with copper, brass or bronze. Among the buildings equipped by Mr. Nichols since the fire are the Murphy block, at the corner of Kearny and California streets, San Francisco (a cut of which appears in this issue of the Architect and Engineer), the Freeborn building and the Halsey building, the latter a five-story office structure on California street, nearly opposite the Merchants' Exchange building, San Francisco.

The Architect and Engineer Of California

Terms of Subscription, $1.50 per Year — Single Copies, 25 Cents

Issued monthly in the interests of Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast.



Contents for October



The First National Bank Building, San Francisco
D. H. Burnham & Company, Architects

Frontispiece, The Architect and Engineer of California, October, 1907

THE

Architect and Engineer

Of California

Vol. X. OCTOBER, 1907. No. 3.

The Reconstruction of San Francisco

By WILLIS POLK, Architect



PROGRESS in rebuilding the burned district of San Francisco has advanced to a point that must remove all doubt, not only as to the rebuilding of the entire district, but of its rebuilding in a more substantial manner than before. The amount of construction at present under way must be amazing to all observers. A view of the financial district from any of the high buildings discloses steel frames in almost every direction and apparently without end. That so much has been accomplished, after the enormous losses occasioned by the fire, could justly be doubted, were it not that the physical evidence of present operations is convincing beyond argument.

An accurate estimate of the destruction of property by the fire has not been made and possibly could not be made. It has been variously approximated at from three hundred and fifty millions to one billion of dollars. The burned district covered an area of approximately four square miles, or say, 111,513,400 square feet. In the financial district, with its "class A" buildings, the average loss was say $30 per square foot. In the "class B" section the average loss was say $15 per square foot. In the remainder of the burned district the average loss was say $2 per square foot. Deduct 33 per cent of the burned area for streets, or say about 37,171,000 square feet. In the financial district the loss was approximately 10,000,000 square feet at $30, or $300,000,000.

In the "class B" district the loss was about 20,000,000



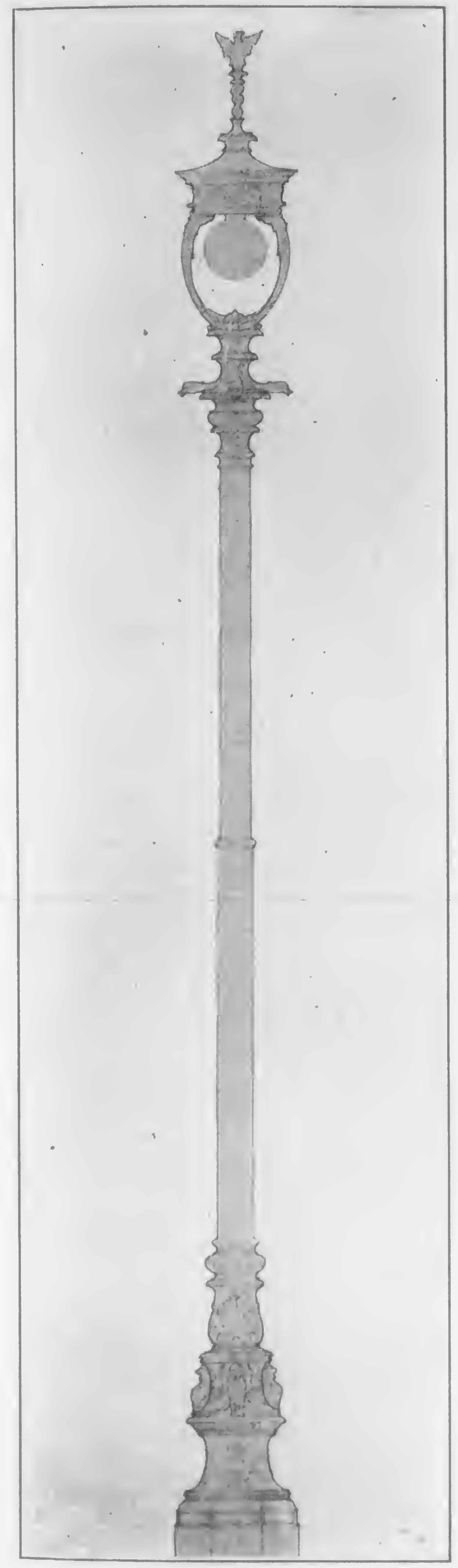
Entrance First National Bank Building

Equipped with Otis Elevators — *D. H. Burnham & Company, Architects*

square feet at $15, or $300,000,000. In the remainder of the burned district the loss was at least 25,000,000 square feet at $2, or $50,000,000. Leaving approximately 20,000,000 square feet for vacant lots and unimproved property. This would make a grand total of $650,000,000 loss on buildings. Then the loss on merchandise and household goods probably reached $100,000,000, making a grand total loss of $750,000,000. We have collected about $200,000,000 insurance, leaving a net loss, which this community suffered, of $550,000,000. This loss must be made up, it having been absolutely lost beyond recovery, it must be entirely recreated. The property owner, whose building was destroyed and whose income was cut off, is the greatest sufferer and to recover from his losses will, in many cases, be impossible. Many property owners, therefore, are doomed to bankruptcy. This class of our citizens naturally takes a despondent view of the future. The professional men, mechanics, and laborers, on the contrary, were suddenly presented with a tremendous demand for their labor and consequently are prospering. The demand for labor, both skilled and unskilled, has already increased our population to a very large extent.

The destruction of private fortunes by the fire, while discouraging to the individual victim, has opened a wide field for investment to outsiders with capital. Many investors are quietly looking the field over and are taking advantage of the situation. Titles to real estate will change hands, values will fluctuate, different districts will compete for business advantages, but the wealth of this city as a community will increase day by day.

The present rebuilding in many instances is on a better and larger scale than



Accepted Design for Ornamental Street Lights to Be Placed on Sutter Street from the Ferry Building to Fillmore Street, San Francisco.

before; at the same time a tremendous amount of building is being done that should be prohibited by law, and a great deal is being done contrary to the present building and fire regulations. Property owners, in their anxiety to restore their property to an income-producing basis, ignore nearly all of the many lessons taught by the fire. The proper protection of steel scarcely existed before the fire; such protection adds to the total cost of building scarcely 2½ per cent, yet to save this small percentage many steel buildings are now being erected with the steel improperly protected and subject to serious damage in case of fire. The earthquake did not damage any buildings that were properly designed, well constructed and resting upon firm foundations, yet many buildings are now being constructed in a manner that will court certain destruction in case of another earthquake.

It is almost certain that within twenty years San Francisco will have a population of two million people. Our progress in rebuilding has been carried on so far in the face of obstacles of every sort, carried on without concert of action or organized effort, yet it has been marvelous. Indeed, it is doubtful whether more could have been done under any circumstances. However, how much wiser it would be for our citizens to organize and co-operate. Our future seems to be assured even without such co-operation or organization, but how much greater would it be if we organized and worked together?

There is hope that our new citizens will understand the advantage of co-operation better than our old ones. They could not understand it less.

* * *

Lots of people are weighed and found wanting in the social scale.

* * *

It is more easy to evade the trouble which Heaven sends us than that which we bring upon ourselves.

* * *

Franklin—"Did Smith have any luck when he sneaked away and went fishing Sunday?"

Penn—"Yes; his wife wasn't at home when he got back."



The New Chronicle Building, San Francisco
Equipped with Otis Elevators D. H. Burnham & Company, Architects

A Plea for Fireproof Construction

By W. J. BARTNETT

IN A recent interview in New York, D. H. Burnham remarked in connection with San Francisco that if the city is to regain the confidence of financial interests and take its place as one of the great American cities, it must be reconstructed as a fireproof city.

The wisdom of these words has lately been evidenced by a number of interviews with prominent financiers of the East. The general feeling is, that if capital is to flow into the city for its rebuilding, extraordinary efforts must be made to perfect in all possible ways its fire protective system.

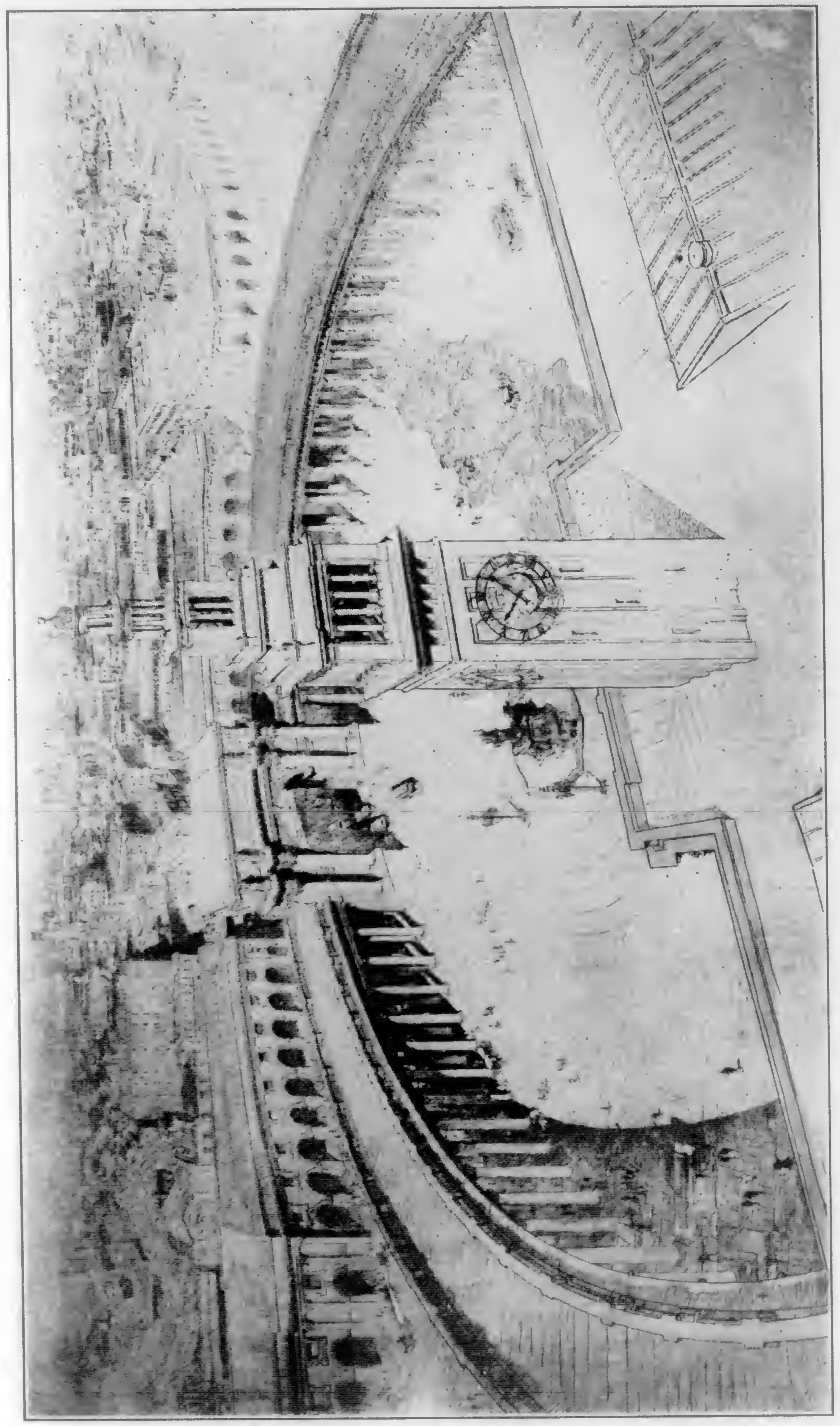
This view of the situation is certainly one that must be heroically met if San Francisco is to be rebuilt on lines proportionate to her dignity as the metropolis of the Pacific. This prejudice in the money centers of the East must be overcome, for it is in those centers and the money centers of Europe that the money—upward of $100,000,000—will have to be secured for the city's upbuilding in a manner suited to the business she is now doing and the vast increase which the next few years will bring.

To rush up cheap structures, for lack of money with which to erect the stately fireproof edifices which otherwise would be built, and cover the burned area with fire traps, is to menace the city's future, for it is but inviting another conflagration. This condition of affairs is readily perceived by the agents of the money markets, and unless very strong efforts are made in the direction of fire protection on an adequate scale the money necessary for the erection of fireproof buildings will hardly be forthcoming in any considerable amounts. The cheap structures are going up and are necessary as a temporary expedient to house the business, but the fact remains that they must presently be replaced by more adequate buildings of the fireproof class. To do this, it is necessary to borrow money. To get this money it is necessary to show to the world that elaborate precautions are being taken to obviate future conflagrations. These facts are self-evident and should make a strong impression on every owner of property in the city, every merchant in the city, every person in any way interested in the business of the city.

To meet this situation no mere temporary expedient will suffice. The money lenders are not satisfied with surface appearances. Some great, comprehensive and fully adequate plan must be carried out, if results are to be obtained. It is obvious that the mere perfecting of the city's water supply will not be sufficient; that can be but part of an adequate plan. The situation demands other elements of protection, among them the widening of certain streets, the establishment of new streets and the laying out of open park spaces at intervals.

To accomplish this requires the amendment of the charter so that a proper bond issue can be authorized, the framing of the bond issue to enable such work to be undertaken and the sale of the bonds. Following this it would perhaps be wise to call Mr. Burnham to the city to head a commission appointed to undertake this work or to act in concert with the Board of Supervisors.

San Francisco is now suffering from lack of co-operation and unity of action. Unity of action is essential if we are to accomplish much. To bring together the diverse interests will require a generally recognized leader. Such a leader is perhaps to be found in Mr. Burnham. Furthermore, if Mr. Burnham was to head this work of reconstruction and improvement the financial centers of the world would accept his utterances and the credit of our people would be materially assisted by the statements he would make as



Proposed Peristyle and Arch, Foot of Market Street, San Francisco
D. H. Burnham & Company, Architects

to the city's progress. Today San Francisco is discredited to a large extent to the money centers of this country and Europe. The true conditions as to progress here are not understood. The city has done much; in fact, has made wonderful headway. She can do more in the coming year than she has done in the past, provided she outlines a definite constructive program contemplating the issuance of bonds for the necessary municipal improvements, including an entirely adequate fire protective system, and calls to the leadership a man such as Mr. Burnham, who has the confidence of the financiers of America and Europe. After his long study of the city, culminating in the magnificent plans for its improvement which bear his name, there is little doubt that he would accept an invitation to come.

Let the Mayor and the Supervisors lend a hand, the charter be amended, a bond issue authorized, the bonds sold, Mr. Burnham invited to come and the good work go on.

* * *

San Francisco's Recuperative Energy

THERE is a popular impression here in the south, and to a very large extent all over the country, that the city of San Francisco is now "down and out," having "taken the count" and that her seconds have "thrown up the sponge.". San Francisco has had misfortunes enough to justify the assumption of just such a desperate situation as would be indicated by this expressive language of the prize ring, and under the same circumstances almost any other city would, indeed, be "down and out." Indeed, we doubt very much whether Los Angeles could recover in a lifetime from such a disaster as San Francisco has suffered; and this is not to be understood, either, as any reflection upon our neighbor, for the Southern California metropolis is really a wonder of enterprise and growth and industrial activity.

We have said that there is a popular impression that San Francisco is a "dead one." There is no greater error possible. San Francisco is today the busiest city in the United States, if not in the world. On the whole peninsula upon which the California metropolis is situated one cannot get out of hearing of the persistent stroke of the builder's hammer. The old business section is a Bedlam of structural activity. Not one or a dozen, but literally hundreds of steel and concrete buildings, the most substantial known class of construction, are pushing their sturdy frames into the high altitudes overlooking the bay and ocean, defying the earthquake demon and standing as lofty monuments to the courage and determination of these people whom adversity has once stripped in a few hours of the accumulations of a lifetime. It is stated that there are at this time under construction in the city of San Francisco more than 3000 buildings, but that over 6000 buildings have been erected since the fire. Fifty thousand men are today engaged in the building trades of San Francisco alone, while the stupendous sum of $80,000,000 has already been expended in the work of rehabilitation, not including the restoration of commercial stocks. It is estimated that more than $30,000,000 has been paid into the pockets of San Francisco day laborers. San Francisco a dead one! There is nowhere in the world a city evidencing such pronounced symptoms of life and vigorous health. Instead of the common expressions of disparagement which we hear so often, we ought every one of us to have our hats off in wonder and admiration for the growth and progress which San Francisco has made and is making in the face of every possible discouragement. * * * —Riverside Enterprise.



The Reconstructed Mills Building, San Francisco
Equipped with Otis Elevators *D. H. Burnham & Company, Architects*



Consultation Room of the D. H. Burnham & Company, Merchants' Exchange Building, San Francisco

Day Dreaming

Day-dreaming is a good stimulant to the ambition, but, like many a stimulant, it must be taken in moderation to give the best results. Dream golden dreams, and build aircastles if you will, for great accomplishments must be dreamed of in this way before they become realities. But don't forget that the dream is a mere outline plan, and it takes work to build the real castle. The exact proportion of time that should be given to dreaming and the time for work have never been set forth, but the lion's share is evidently on the side of work.

* * *

Conceited people would not be so bad if they didn't spend so much time in trying to monopolize all the limelight.



The Reconstructed Mills Building, San Francisco

Equipped with Otis Elevators — D. H. Burnham & Company, Architects



Consultation Room of the D. H. Burnham & Company, Merchants' Exchange Building, San Francisco

Day Dreaming

Day-dreaming is a good stimulant to the ambition, but, like many a stimulant, it must be taken in moderation to give the best results. Dream golden dreams, and build aircastles if you will, for great accomplishments must be dreamed of in this way before they become realities. But don't forget that the dream is a mere outline plan, and it takes work to build the real castle. The exact proportion of time that should be given to dreaming and the time for work have never been set forth, but the lion's share is evidently on the side of work.

* * *

Conceited people would not be so bad if they didn't spend so much time in trying to monopolize all the limelight.



The New Oregon Hotel, Portland
Sutton & Weeks, Architects

Architects' Right to Compensation for Drawing Plans

THE right of an architect to recover compensation for plans which he has drawn is always based upon contract. If any of the essential elements of a contract are missing from the transaction upon which the architect's claim rests, then he is not legally entitled to payment, no matter how much time and labor he may have expended, or how great expense he may have incurred in the work, says John E. Bray, a member of the New York Bar, in a recent issue of The Architects' and Builders' Magazine.

An illustration is found in the case of Allan vs. Bowman, 7 Mo. App. 29. There an architect, having learned that a certain person was about to build a house, solicited from him the superintendence of the work. The architect called upon and interviewed the owner several times and, on one occasion, the owner went to see the architect at his office, but no definite agreement was entered into. The architect, however, made sketches of a ground plan and a front elevation, which he exhibited to the owner at the latter's residence, where a number of suggestions for improvements were offered by the owner's wife and made note of by the architect. The owner then decided to drop the matter, but told the architect that he would appoint him superintendent of the work if he later determined to build. The owner thereafter commenced to build, but engaged a different superintendent, and the architect rendered his bill for the plans which he had drawn, on the non-payment of which he brought suit. There was, of course, no right of recovery, for the reason that there was no evidence of a promise to pay, either express or implied, and therefore no contract. The plaintiff was in the position of having made an offer which had never been accepted. A person cannot officiously do work in the expectation of an engagement and then, when the expectation fails, sue for the price of the work done. The burden is upon the plaintiff in every case to show that he did his work under a promise, express or implied, by the other party to pay for the work.

The case of Tilley vs. County of Cook, 103 U. S. 154, presents an instance of an architect, disappointed in the collection of his fees, upon somewhat similar grounds. Cook County, Illinois, and the City of Chicago, having decided to erect certain public buildings, invited by newspaper advertisement the submission of plans in competition and jointly offered premiums for the three best plans entered. The plaintiff was awarded the third prize of $1000 and later the County Commissioners passed a resolution adopting his plan as the one after which to build the Court House and City Hall. The plaintiff then started an action to recover five per cent of the estimated cost of the buildings as compensation. But here again recovery was denied because there was no contract. By the payment to the plaintiff of the amount of the prize won by him the defendants discharged every obligation which they owed him arising out of the preparation of the plans for the proposed buildings. If the plaintiff had any right whatever to compensation, it was necessarily based upon the resolution of the County Commissioners adopting his plans. But the resolution was not passed at the instance or suggestion of the plaintiff. It was not in itself a contract, but a mere voluntary expression of intention, which might have been reconsidered and rescinded the following day. It was no more a contract than if a private person should announce his intention of erecting a house in accordance with a design which he had seen in an architect's office, and should change his mind before beginning the execution of his purpose without even calling for or using the plans. The plaintiff in the Cook County case offered



The New Oregon Hotel, Portland
Sutton & Weeks, Architects

Architects' Right to Compensation for Drawing Plans

THE right of an architect to recover compensation for plans which he has drawn is always based upon contract. If any of the essential elements of a contract are missing from the transaction upon which the architect's claim rests, then he is not legally entitled to payment, no matter how much time and labor he may have expended, or how great expense he may have incurred in the work, says John E. Bray, a member of the New York Bar, in a recent issue of The Architects' and Builders' Magazine.

An illustration is found in the case of Allan vs. Bowman, 7 Mo. App. 29. There an architect, having learned that a certain person was about to build a house, solicited from him the superintendence of the work. The architect called upon and interviewed the owner several times and, on one occasion, the owner went to see the architect at his office, but no definite agreement was entered into. The architect, however, made sketches of a ground plan and a front elevation, which he exhibited to the owner at the latter's residence, where a number of suggestions for improvements were offered by the owner's wife and made note of by the architect. The owner then decided to drop the matter, but told the architect that he would appoint him superintendent of the work if he later determined to build. The owner thereafter commenced to build, but engaged a different superintendent, and the architect rendered his bill for the plans which he had drawn, on the non-payment of which he brought suit. There was, of course, no right of recovery, for the reason that there was no evidence of a promise to pay, either express or implied, and therefore no contract. The plaintiff was in the position of having made an offer which had never been accepted. A person cannot officiously do work in the expectation of an engagement and then, when the expectation fails, sue for the price of the work done. The burden is upon the plaintiff in every case to show that he did his work under a promise, express or implied, by the other party to pay for the work.

The case of Tilley vs. County of Cook, 103 U. S. 154, presents an instance of an architect, disappointed in the collection of his fees, upon somewhat similar grounds. Cook County, Illinois, and the City of Chicago, having decided to erect certain public buildings, invited by newspaper advertisement the submission of plans in competition and jointly offered premiums for the three best plans entered. The plaintiff was awarded the third prize of $1000 and later the County Commissioners passed a resolution adopting his plan as the one after which to build the Court House and City Hall. The plaintiff then started an action to recover five per cent of the estimated cost of the buildings as compensation. But here again recovery was denied because there was no contract. By the payment to the plaintiff of the amount of the prize won by him the defendants discharged every obligation which they owed him arising out of the preparation of the plans for the proposed buildings. If the plaintiff had any right whatever to compensation, it was necessarily based upon the resolution of the County Commissioners adopting his plans. But the resolution was not passed at the instance or suggestion of the plaintiff. It was not in itself a contract, but a mere voluntary expression of intention, which might have been reconsidered and rescinded the following day. It was no more a contract than if a private person should announce his intention of erecting a house in accordance with a design which he had seen in an architect's office, and should change his mind before beginning the execution of his purpose without even calling for or using the plans. The plaintiff in the Cook County case offered

to prove a custom of architects, that, when prizes are offered for the plans of a building, the successful competitor remains the owner of his designs and is entitled to compensation in addition to the prize money, if the plan is adopted. The court answered this by saying that, if it were the custom and usage among Chicago architects, who enter into a competition for prizes offered for plans, to expect compensation based upon a percentage of the estimated cost as well as the prize, irrespective of whether the plans are used or the building erected, the custom is unreasonable and absurd, and, therefore, not binding in law.

Ordinarily it is necessary that there be a delivery or tender of the plans contracted for in order to justify a judgment for the services rendered in the preparation of the plans. The question of what constitutes a sufficient delivery or tender often arises. In Kutts vs. Pelby, 37 Mass. 65, the plaintiff, at the request of the defendant, drew for him a sketch of an Egyptian front for a theater, which the defendant took and retained for a period of a week. The defendant expressed himself as pleased with the sketch and told the plaintiff to go ahead with the plans for the theater. When the plans were completed the defendant's master builder called for them and kept them for a week, for the purpose of making an estimate of the cost of construction. The plans were then turned over to the defendant, who later decided not to use them in building. The plaintiff was allowed to recover, it being held that there had been a sufficient delivery; it was also held that the defendant's determination not to use the plans, after they had been delivered, did not preclude a recovery.

It is not, however, always necessary that plans actually be delivered in order that the architect who drew them may be entitled to recover for his services. Thus, where it was agreed between the parties that the architect would notify the owner, for whom he had contracted to prepare plans, when the plans were ready and that the latter would then call and examine them, the architect was given a verdict for the amount of his compensation under the contract upon showing that he had completed the plans and had sent word to the owner, who had failed to call for the purpose of inspecting them. Wandelt vs. Cohen, 36 N. Y. Supp. 811.

Where an architect is employed to furnish plans and specifications for a building with an estimate of the probable cost of the work, he is not entitled to pay for his services unless the building can be erected at a cost reasonably approximating that stated in the estimate. In Feltham vs. Sharp, 25 S. E. 619, an architect brought an action to recover three and one-half per cent of $4300, the estimated cost of a building for which he had drawn the plans. Upon the testimony of the defendant that he had submitted the plans furnished to two firms of contractors and that the lower of the two bids made thereon was $7800, it was held that the architect was not entitled to the compensation claimed.

* * *

Poe Revised

I asked the bird
  What it would say
In case it heard
  An oyster bay.
And from above my chamber door
Quoth the raven, "Sagamore!"

The Competition "Ghost"

THE architect's "ghost" has so frequently made his appearance amongst those concerned with architectural competitions, and with material advantages to those who may have called him forth, that some particulars respecting him may be of interest.

Although, as a rule, the architect who employs "ghosts" is perhaps more despised than the employed, yet, to the writer's personal knowledge, many of the most esteemed leading architects have had resort to such aids when preparing their competitive or other schemes for buildings out of their usual class of practice: such as municipal offices, police stations, hospitals, workhouses, asylums, public baths, theaters and music halls; designs for which may have been required from an architect whose experience has been in other directions.

But cases have occurred where architects fully experienced in certain classes of design and planning have been anxious to obtain the ideas of other specialists, but without disclosing the names of those supplying the same; in some instances the aid may be required by reason of pressure of business.

The "ghost," however, has very frequently been employed by the county, municipal, district or other surveyor, who may have been charged with the duty of preparing designs for public buildings without possessing a sufficient knowledge of the nature of the work required, and who may thus deprive qualified architects residing within his district (ratepayers contributing to his salary) of business to which they may have some claim. (This work, supplied by a public surveyor, but done by the "ghost," becomes a reason for an increase in the official's stipend, to which, of course, the neglected architects contribute also their proportion as ratepayers.)

In the case of competitions, the remuneration of the "ghost" often takes the form of a salary to be agreed upon, together with a bonus in the event of success; or if the competitor be placed first, the first premium may be given, after which the "ghost" has no further claim, neither does he obtain any published credit in respect of his successful efforts.

Occasionally the whole of the work of the "ghost" may be done at his own residence or offices; such was the case in connection with an enormous public building, in reference to which the following agreement was signed by a certain very eminent firm of architects and a specialist employed by them:

MEMORANDUM OF AGREEMENT made this .... day of ...., between .... of the one part and .... of the other part. The said .... doth hereby agree to prepare the whole of the plans and drawings required and in accordance with the published instructions to architects, for the competition for the new........... .... at ...., and undertakes to deliver the same at least one week before the .... day of .... next, or at least one week before any later day that may be arranged for by the promoters of this competition; together with a full draft report and estimate of the cost, and will perform the work to the best of his ability and in accordance with all the requirements as far as may be possible. And the said .... do hereby agree to pay to the said .... in respect of the above services the sum of one hundred pounds in manner following, that is to say, the sum of ten pounds on the commencement of the work, the sum of forty pounds when the sketch plans are delivered, and the balance of fifty pounds when the finished plans are delivered, ready for mounting, etc., by the said ....

Should the said .... be appointed architects to carry out the works herein referred to, or any considerable part thereof, they agree to pay the said .... the further sum of two hundred pounds upon receiving the first installment of commission.

Signed by the said parties hereto, the day and year first above written. { ....
....

The employers in the above agreement stood to obtain a commission which, at five per cent, would amount to £10,000, while the "ghost," in the most favorable circumstances, would not get more than £300, although he practically did all that was necessary in obtaining the work.

In what manner does the "ghost" obtain his employment? In some cases he notes that there is to be a competition of architects for schemes for some public building, the special details of which are familiar to him, and he forthwith writes a private letter to those local and other architects who may appear likely to enter upon a little speculation, offering his services upon "speculative terms," though not usually stating what those terms may be in the first instance; occasionally, however, demands for such assistance are the later results of replies to advertisements in the professional journals.

An architect, now deceased, kept in his London office a couple of young assistants who inked-in, colored and finished a large number of competitive drawings which were supplied and finished ready in pencil by a "ghost," who also prepared the report and estimates; the architect who employed him was a thoroughly competent man for architectural work of certain descriptions, but found it necessary to employ someone to make the design for buildings, the details of which were not familiar to him; but it is only fair to state that he paid the "ghost" very handsomely for schemes that would have cost, probably, not less than £800,000 to carry out.

Occasionally a thoroughly incompetent architect is desirous of winning a competition, and has paid a specialist to come into his offices for the purpose. A case occurred some years ago of such a man whose only part in the work was the mounting of the plans on the stretchers; he was the architect of a set of chambers, and the only tenant of the building, which was a standing warning to his fellow townsmen not to employ him; but he won the competition by the efforts of the specialist he had selected! Thus some have greatness thrust upon them!

On occasions the "ghost" has supplied designs for more than one architect in the same competition, in this way gaining an increased possibility of obtaining a bonus, in addition to the extra salary, but this would not frequently occur, and the strain upon the "ghost" in making two schemes for the same building, within a limited space of time, would be considerable, especially where it was desirable that the two designs should be unlike in all respects.

The "ghost" may be perhaps an architect with a small practice who is a good draughtsman and designer, and it often happens that his services are valued rather in respect of the planning, arrangements and construction of a building than for the elevational portions, but his aid in reference to the report and estimates are often desired, especially in those cases where complicated questions arise as to the warming, ventilation, sanitation, engineering, artificial lighting, etc., of a very extensive series of buildings connected with a workhouse, asylum, hospital or other establishment intended for the housing of large numbers of various classes of inmates.

Or the "ghost" may be an architect's assistant out of employment who cannot afford the risk and expenses connected with a competition, but who is only too glad of the temporary work, especially when there is a prospect of further remuneration or employment in the event of success.

During recent years many architectural competitions have had, amongst their conditions, a clause prohibiting the employment of any assistant not a member of the competitor's ordinary staff, but unless a stipulation be added to the effect that all assistants employed must have been in such employment for a term named, the clause could easily be evaded; nevertheless, special assistance is often fairly required, for many details in connection with ex-



House of Henry F. Starbuck, Oakland
H. F. Starbuck, Architect

ceptional building plans, and particularly in reference to certain engineering and sanitary arrangements, are out of the range of an ordinary architect's practice; heating and ventilation and laundry appliances, as connected with very large buildings, have so frequently been unsatisfactory when contrived by architects not having the required previous experience of such works, that the employment of persons well acquainted with these subjects becomes obviously necessary and desirable.

Long before a competition was advertised, local influence has frequently settled that a local architect should have the commission, all that has been necessary being a scheme that would pass muster; hence the appointment of a "ghost" assistant. The selection of his design, however, has not been the only advantage to the architect. The writer recollects a certain case where a competing architect, not getting back his unsuccessful designs, called at the offices of the local surveyor, where, and to his very great astonishment, he saw his plans under the process of being traced; he acted very promptly by tearing off the tracings and, rolling up his drawings, departed, after expressing his opinions very freely.

In such instances as the above there have been deliberate attempts to steal the designs made by an architect, who may, for local reasons alone, have been unsuccessful; yet, as the designs of all the competitors are exposed to view, the unsuccessful architects may all be utilized as unpaid "ghosts"; in fact, there have been numerous instances where unselected designs have influenced very considerably the planning and appearance of the buildings as erected.

In spite of all that has been done towards putting down the "ghost" system, the Royal Institute of British Architects would be surprised to know the names of some of the Fellows and Associates who have taken either the part of "ghosts" or acted as employers of them, the latter including

some of the most respected and best architects of the past quarter of a century.

A very well known firm of architects, in Lancashire, employed occasionally a very able architect as their "ghost": although he was very steady and reliable, yet it was found necessary (with his consent) to lock him up in an office while he was working, with only the plans and papers relating to the work in hand accessible to him, as he had a bad habit of turning to other subjects, and a great difficulty in concentrating his attention; probably had it not been for this failing he would have been in more successful practice on his own account; several works on construction were written and published by him and are of high value, but his habits and nature fitted him only for employment under architects with business habits; he gained some notable success as a "ghost" in the employment of those who had the advantage of recognizing his great ability.—"X" in the Builders' Journal.

* * *

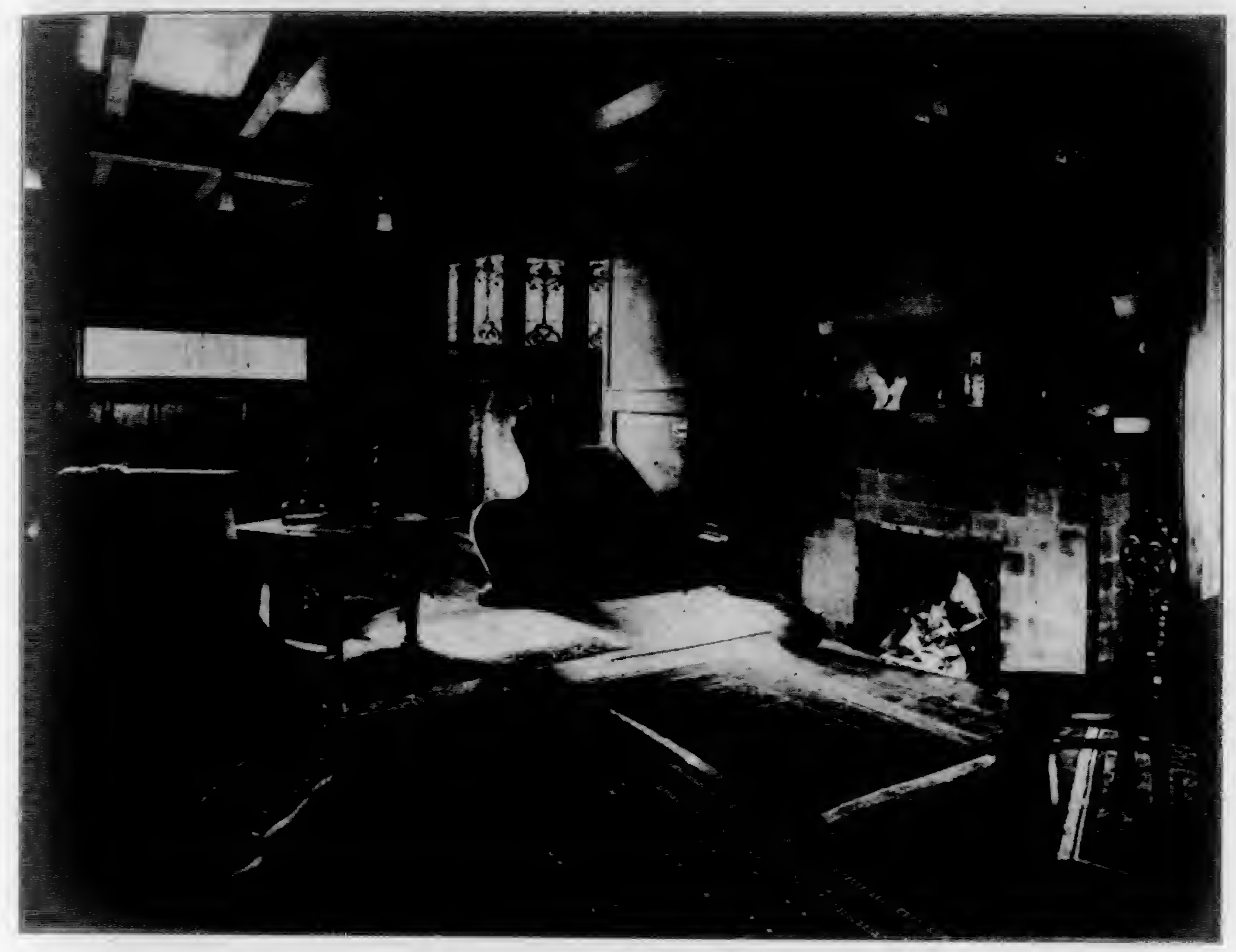
The Up-to-date Architect

IN DISCUSSING in a recent address the qualifications of the up-to-date architect N. C. Fowler, Jr., a member of the profession, presented the following ideas: The architect is born. He cannot be made. If the boy does not show some creative skill, even while in his teens, there is not one chance in a thousand that he will ever become a successful architect. The copier is not an architect. The architect may copy, but he does something besides copying. He mixes his own ideas with those of others, and nothing that he does is devoid of his personality. The boy who can draw a plan geometrically correct may be entirely without the artistic temperament necessary for success in architecture.

Not only the ability to construct, but also that quality of ability which creates in advance the plans of construction, is essential to the proper practice of architecture. The successful architect is both a nature-made and a self-made man. Nature-made in that he possesses the natural ability necessary to success; and self-made because he has thoroughly trained this natural ability. The architect possesses something which is not a part of the man of business—a sense of harmony, an artistic mental attainment, a creative ability—yet he must have some of the qualities of the successful business man—an appreciation of the importance of detail and the ability to handle men and things.

The greatest hardship with which an architect has to contend is due to the fact that the very nature of his work, combining as it does the practical with the artistic, prevents the average man from distinguishing between real merit and mediocrity, and he frequently fails to command the appreciation and encouragement which his work deserves, and which is given more frequently in other professions.

The compensation for work of ordinary size, such as must make up the bulk of the output of the average does not possess natural aptitude for this work. The architect is a creator of originality. He is not a mere plan drawer and specification writer. He actually does something. The conscientious, hard working architect, endowed with a fair degree of talent, usually gets from his profession an income less than the earnings of a small contractor. At the minimum rates established by the American Institute of Architects few architects today acquire a competency for old age. Yet the public regards these absurdly low rates as exorbitantly high.



Interior of House of Henry F Starbuck, Oakland
H. F. Starbuck, Architect



Interior of House of Henry F Starbuck, Oakland
H. F. Starbuck, Architect

some of the most respected and best architects of the past quarter of a century.

A very well known firm of architects, in Lancashire, employed occasionally a very able architect as their "ghost": although he was very steady and reliable, yet it was found necessary (with his consent) to lock him up in an office while he was working, with only the plans and papers relating to the work in hand accessible to him, as he had a bad habit of turning to other subjects, and a great difficulty in concentrating his attention; probably had it not been for this failing he would have been in more successful practice on his own account; several works on construction were written and published by him and are of high value, but his habits and nature fitted him only for employment under architects with business habits; he gained some notable success as a "ghost" in the employment of those who had the advantage of recognizing his great ability.—"X" in the Builders' Journal.

* * *

The Up-to-date Architect

IN DISCUSSING in a recent address the qualifications of the up-to-date architect N. C. Fowler, Jr., a member of the profession, presented the following ideas: The architect is born. He cannot be made. If the boy does not show some creative skill, even while in his teens, there is not one chance in a thousand that he will ever become a successful architect. The copier is not an architect. The architect may copy, but he does something besides copying. He mixes his own ideas with those of others, and nothing that he does is devoid of his personality. The boy who can draw a plan geometrically correct may be entirely without the artistic temperament necessary for success in architecture.

Not only the ability to construct, but also that quality of ability which creates in advance the plans of construction, is essential to the proper practice of architecture. The successful architect is both a nature-made and a self-made man. Nature-made in that he possesses the natural ability necessary to success; and self-made because he has thoroughly trained this natural ability. The architect possesses something which is not a part of the man of business—a sense of harmony, an artistic mental attainment, a creative ability—yet he must have some of the qualities of the successful business man—an appreciation of the importance of detail and the ability to handle men and things.

The greatest hardship with which an architect has to contend is due to the fact that the very nature of his work, combining as it does the practical with the artistic, prevents the average man from distinguishing between real merit and mediocrity, and he frequently fails to command the appreciation and encouragement which his work deserves, and which is given more frequently in other professions.

The compensation for work of ordinary size, such as must make up the bulk of the output of the average does not possess natural aptitude for the work. The architect is a creator of originality. He is not a mere plan drawer and specification writer. He actually does something. The conscientious, hard working architect, endowed with a fair degree of talent, usually gets from his profession an income less than the earnings of a small contractor. At the minimum rates established by the American Institute of Architects few architects today acquire a competency for old age. Yet the public regards these absurdly low rates as exorbitantly high.



Interior of House of Henry F Starbuck, Oakland
H. F. Starbuck, Architect



Interior of House of Henry F Starbuck, Oakland
H. F. Starbuck, Architect

Why Brick Buildings are Best

STABILITY, the most important feature of any building, especially one used for business purposes, is not absolutely certain with cement. It is certain with brick. A properly constructed brick building may be torn down, but can not be shaken down. How many brick buildings did you ever know to collapse? Brick buildings do not collapse. They are as stable as the everlasting hills. Another important feature of brick is its permanency. Bricks made so long ago that their origin is lost in the maze of antiquity are constantly being dug up on the sites of ancient cities as sound and clean as the day they were burned. Brick will not burn. Good brick will not crack, as stone does, and brick will not decay like wood. All these are important elements and deserve careful consideration. Permanency, stability and beauty are three most important considerations in the construction of any building. Another thing is cost. But in this ought to be included cost of maintenance as well as first cost of construction, and it costs much less to keep up a brick building than it does one of wood or other perishable materials, and therefore the cost of a brick building, extending over a series of years, is less, all things considered, than any other building that can be built. More and more these facts are recognized. More and more builders are seeking out the material which most nearly combines in proper proportions these features, and more and more brick is found to be the one material which includes these features. The result is obvious in every city and town in the country.—Clayworker.

* * *

Cement Shingles Cheaper than Wood

The use of cement for replacing articles made of wood is increasing every day. Cement has already replaced wood, to a great extent, in building sidewalks, bridges, fenceposts, steps, building walls, foundations and many other purposes and is commanding considerable attention at present in the form of shingles, says the Popular Mechanic's Exchange. In the earlier instances of concrete roofing the material was used in the same manner as in laying a floor, but the great strength required in a floor is not necessary in a roof. The cement shingles are only a little heavier than slate and not much more expensive than the best wood shingles, and, as they are practically indestructible, they are cheaper in the end than any other material, including tile and slate. These shingles are made in a great variety of designs, and are reinforced with metal skeletons, which hold the cement together, and terminate in loops at the edge for nailing to the roof. They are practically everlasting, as moisture, the cause of universal decay, is the chemical agent in the process of hardening cement and when properly mixed and tempered the cement shingles become harder and more durable the more they are exposed to the weather.

* * *

Chanson De Nuit

Now, in these chilly autumn nights
When you'd reach down to yank it
Up o'er your form
To make you warm—
Oh, where's that other blanket.
—Exchange.



A Railroad Bridge of Reinforced Concrete

The Tiny-Visintini System of Reinforced Concrete

By L. MESS, Consulting Engineer

AN EPOCH-MAKING discovery in the domain of reinforced concrete is being introduced by the Concrete & Steel Engineering Co., of 410 Kearny street, San Francisco. This is the "Tiny-Visintini" System of Reinforcement, American Patent 735,920 of Engineer Visintini of Austria.

This system, which has, in a short time, inaugurated a complete transformation in the world of reinforced concrete, has already become known and appreciated by the engineering profession throughout the entire world.

The underlying principle of the system is to produce beams and girders out of concrete and steel which give the greatest possible strength with a minimum of material, and make possible a reliable theoretical calculation, and also allow for the construction of lattice girders and beams in a simple way as well as en masse.

Every engineer who has made calculations in reinforced concrete construction, is fully aware of the fact that, in the ordinary concrete system, there is a positive waste of material, and that the best qualities of the concrete and steel are only partially utilized.

A complete use of the material at hand can only follow in correctly constructed lattice girders, where a uniform distribution of the stresses over the sections is secured, due coincidences of the axes of the sections and the direction of the stresses.

The lattice girders in the Visintini now known as the "Tiny" System, are composed, as may be seen from illustration, of an upper flange, which, with an equally distributed load, is subject to compression only, to which the existing concrete is of itself sufficient.

The lower flange, which is only used for tension and which takes up all tension stresses, is composed of steel bars running through horizontally. These

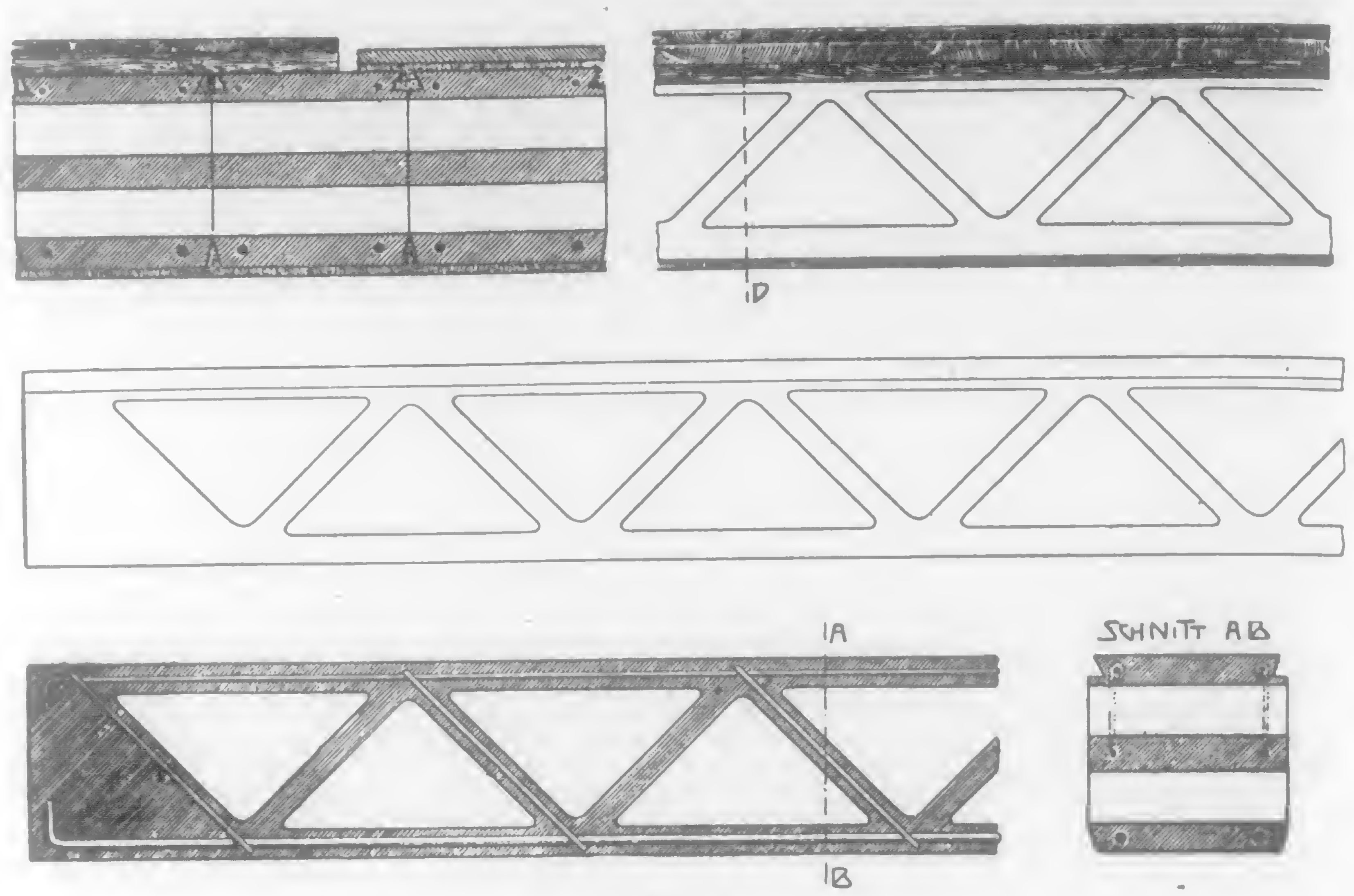


Fig. 1.

bars are bent up at the end. The concrete surrounding the steel bars is used only for protecting the steel from rust and fire.

The lattice work between serves the purpose of connecting these two flanges, and of these diagonals, one takes up the tensile and the other compressive strains.

No steel is put into the diagonals for compression because the compressive strains are taken up by concrete itself.

Although depending on the form, the Tiny beams generally have parallel top and bottom chords or flanges with alternating straight and oblique or only oblique web members.

The connection of the diagonals with the upper and lower flange, is obtained simply by bending and hooking the ends of the web reinforcement around the flange reinforcement.

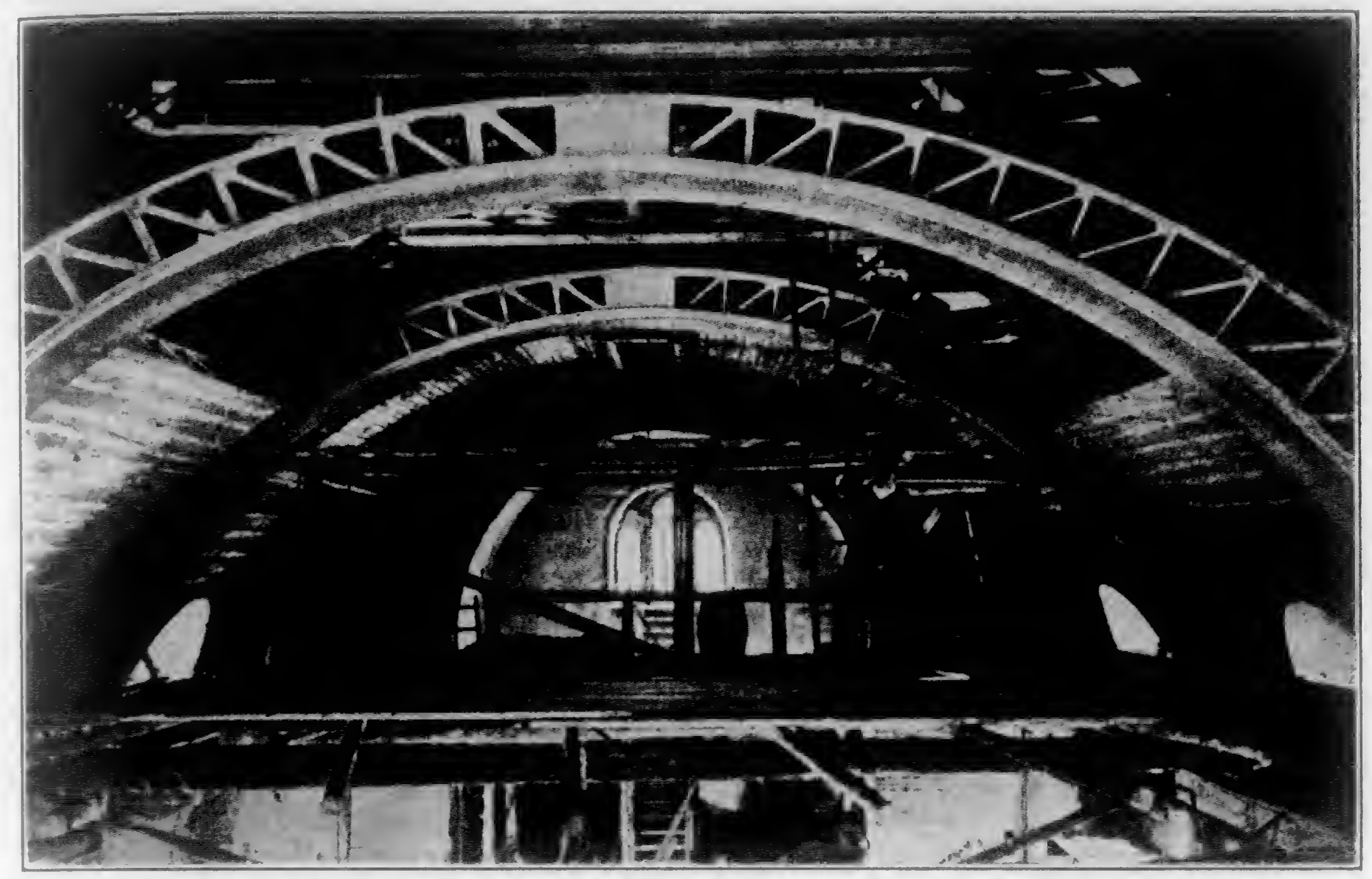
The connections so placed, in spite of their simplicity are sufficiently strong, because the surrounding concrete prevents them from bending and sliding, so, as far as security is concerned, they have the same quality as if connected by rivets.

The lattice girders can be put up for heavy and light loads and spans, as may be desired advantageously and economically for spans from 10 to 120 feet.

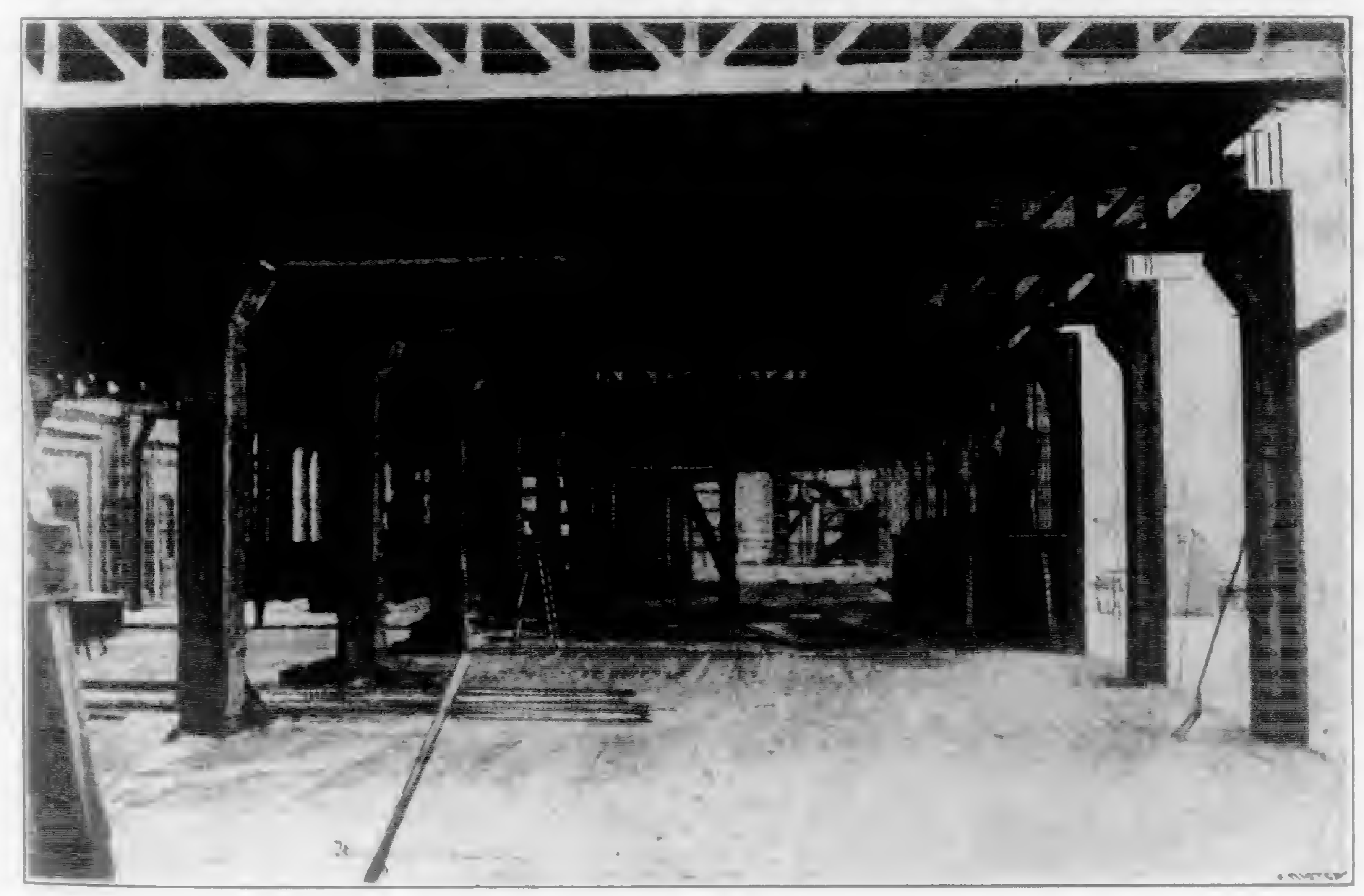
The making of the concrete girders takes place on level ground in the workshop or at the building. The girders are cast in wooden forms in which were placed the steel reinforcing rods and metal or wooden cores.

When the concrete has set, the form is taken away, and the girders kept moist two or three weeks. They then are ready for use and can be brought to the place of building. The recesses and little grooves at top and bottom of the adjacent sides of the floor beams are filled with cement mortar, so that the floor now is a monolithic mass.

This remarkably simple method of construction demands no great effort nor preparation, so that the manufacturing of the beams is not limited to factories fitted up in any particular way. In most cases, the manufacture of the



Arch for a Church in Aussig in Course of Construction, Showing the Arch Girders With Part of the Roof Beams in Position. Span, 45 Feet; Roof Beam, 18 Feet Long



View Showing Inside Floor Near Completion Factory Building, Reading, Pa.

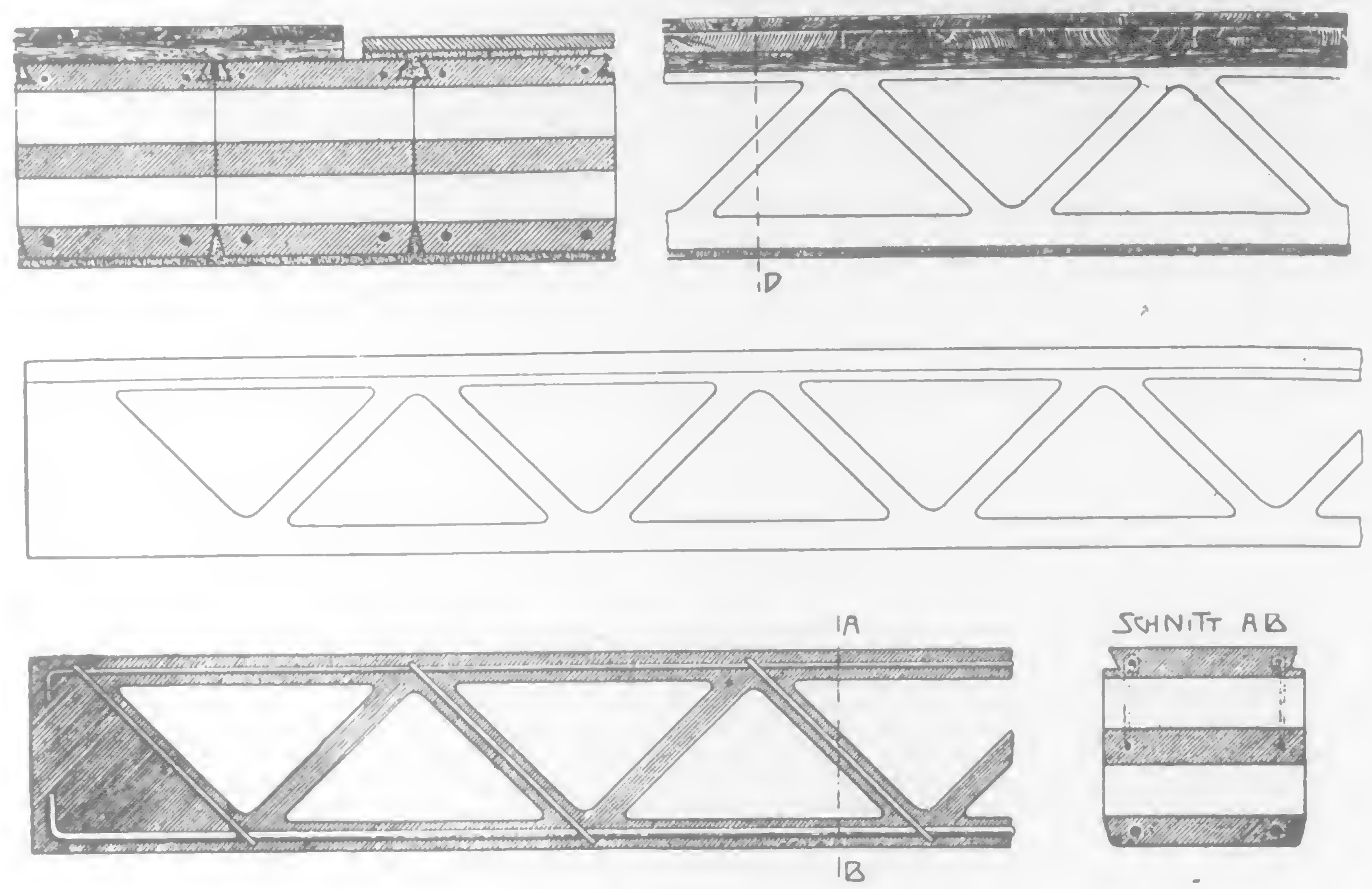


Fig. 1.

bars are bent up at the end. The concrete surrounding the steel bars is used only for protecting the steel from rust and fire.

The lattice work between serves the purpose of connecting these two flanges, and of these diagonals, one takes up the tensile and the other compressive strains.

No steel is put into the diagonals for compression because the compressive strains are taken up by concrete itself.

Although depending on the form, the Tiny beams generally have parallel top and bottom chords or flanges with alternating straight and oblique or only oblique web members.

The connection of the diagonals with the upper and lower flange, is obtained simply by bending and hooking the ends of the web reinforcement around the flange reinforcement.

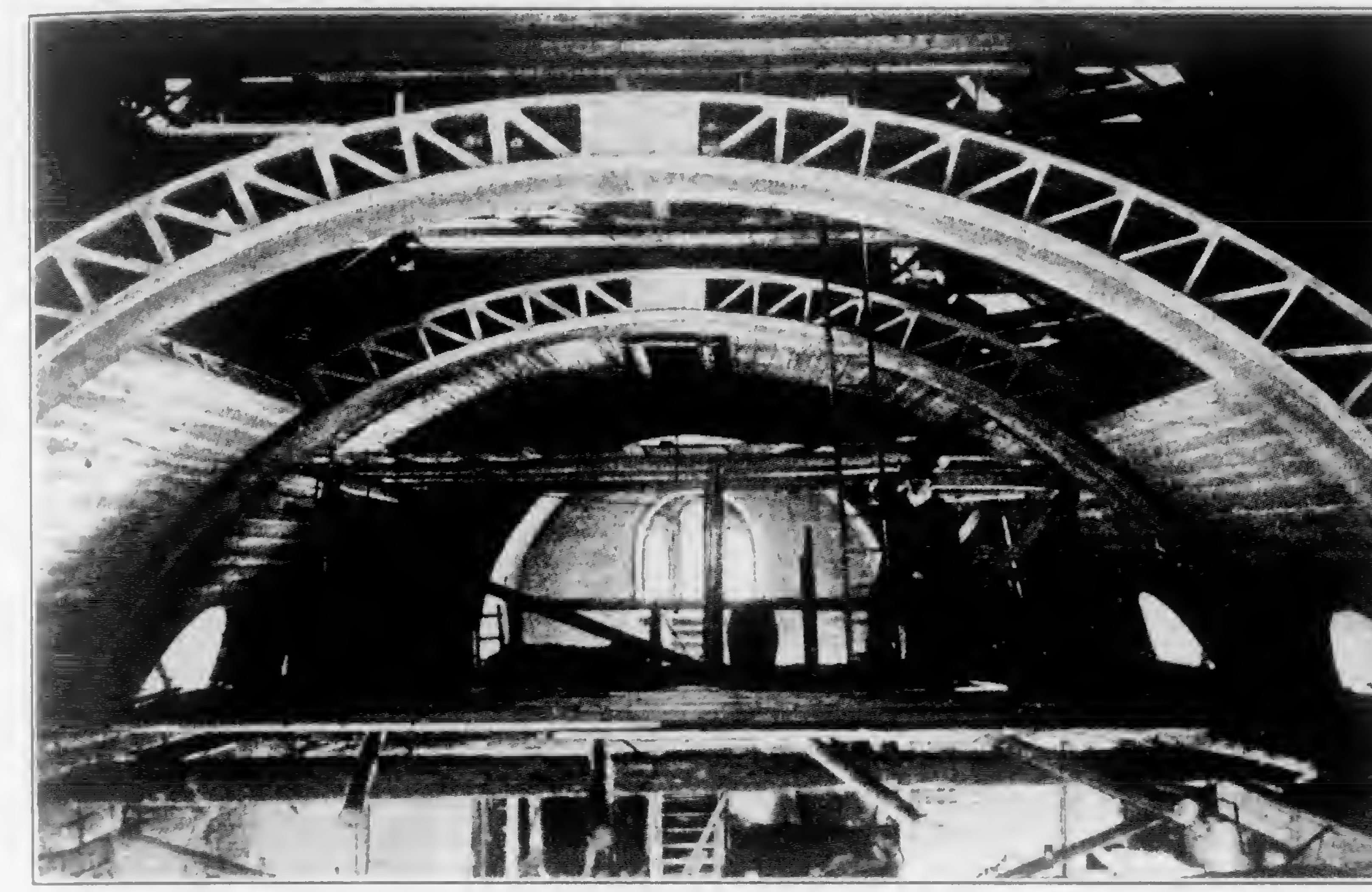
The connections so placed, in spite of their simplicity are sufficiently strong, because the surrounding concrete prevents them from bending and sliding, so, as far as security is concerned, they have the same quality as if connected by rivets.

The lattice girders can be put up for heavy and light loads and spans, as may be desired advantageously and economically for spans from 10 to 120 feet.

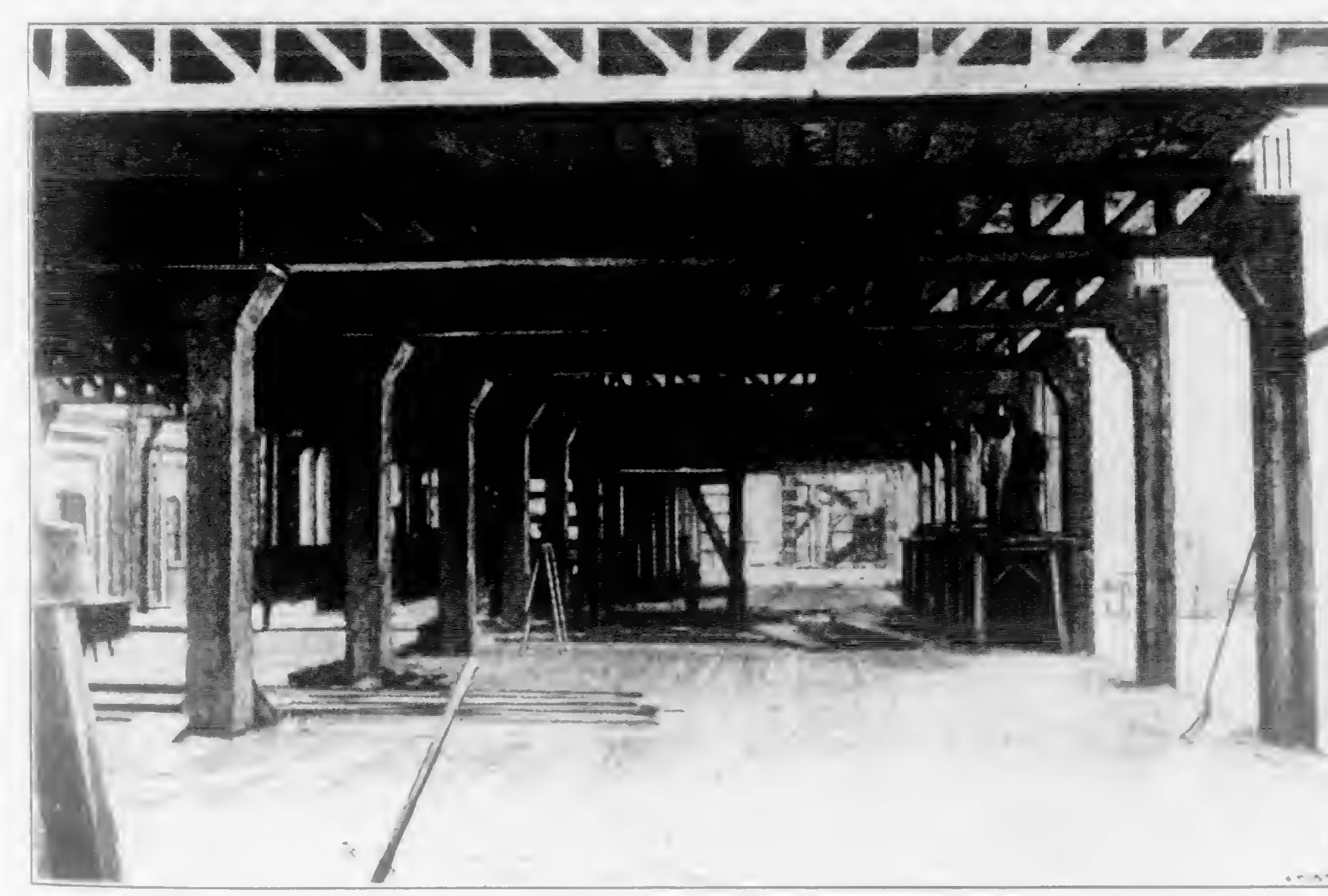
The making of the concrete girders takes place on level ground in the workshop or at the building. The girders are cast in wooden forms in which were placed the steel reinforcing rods and metal or wooden cores.

When the concrete has set, the form is taken away, and the girders kept moist two or three weeks. They then are ready for use and can be brought to the place of building. The recesses and little grooves at top and bottom of the adjacent sides of the floor beams are filled with cement mortar, so that the floor now is a monolithic mass.

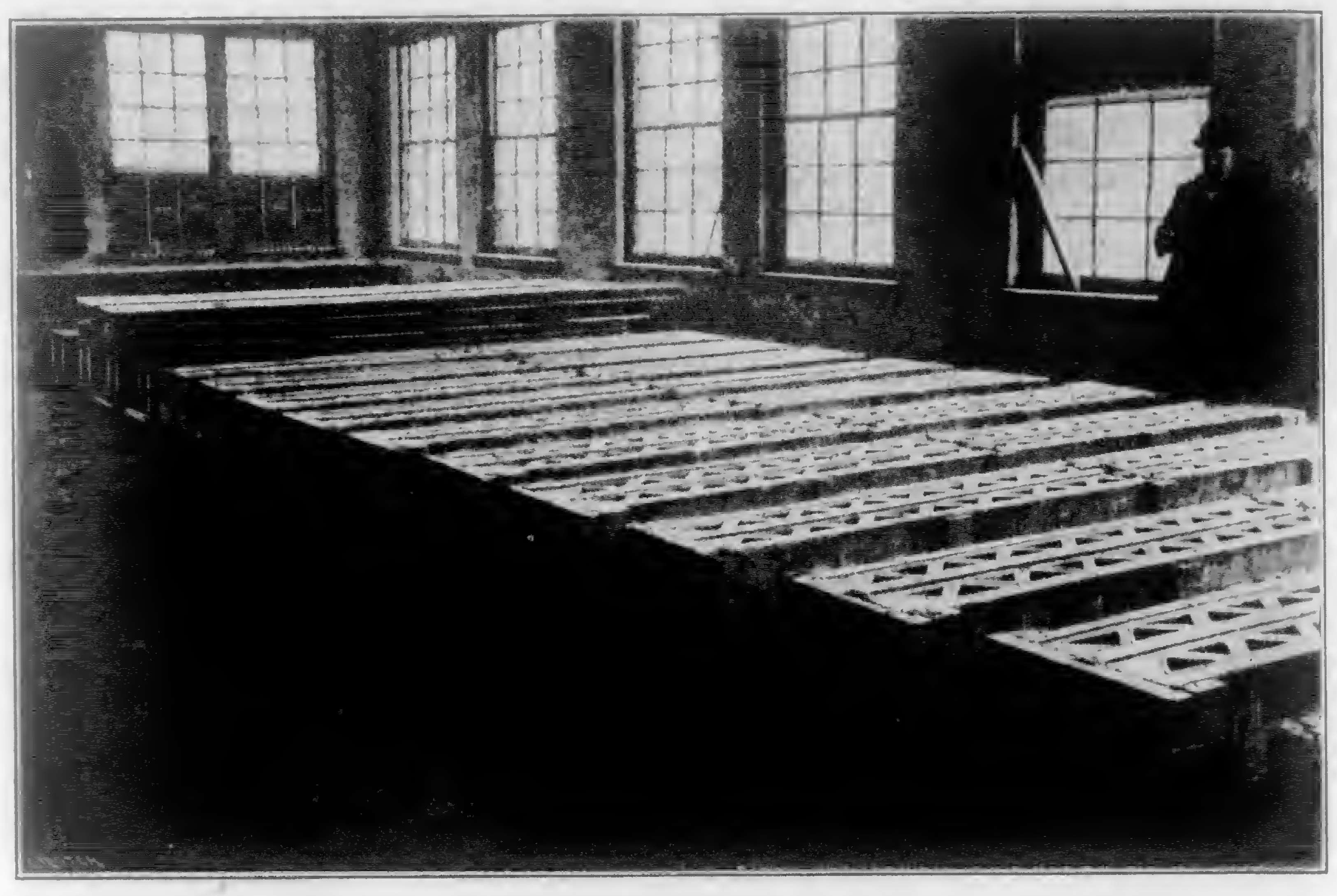
This remarkably simple method of construction demands no great effort nor preparation, so that the manufacturing of the beams is not limited to factories fitted up in any particular way. In most cases, the manufacture of the



Arch for a Church in Aussig in Course of Construction, Showing the Arch Girders With Part of the Roof Beams in Position. Span, 45 Feet; Roof Beam, 18 Feet Long



*View Showing Inside Floor Near Completion
Factory Building, Reading, Pa.*



View Showing Floor Beams in Forms

beams and girders can take place directly at the building or in the immediate neighborhood of it.

The application of the beams is particularly manifold. It embraces not only floors, columns, walls and girders for the construction of buildings, but also bridges, docks and canals.

In exactly the same commendable manner it is adapted to arched forms for churches, schools, halls, etc.

In the simplest manner, large rooms can be made architecturally effective, and easily fireproof in reinforced concrete by this system.

For calculating the cost of the beams, the simplest imaginable methods are used. The manner of calculating being similar to that employed for steel lattice girders.

With the correct use of the system, there is a saving of at least 25 per cent in concrete, 10 per cent in steel and 60 to 75 per cent in form and carpenter work.

Compared with any other reinforced concrete system, the cost, with the same strength, is at least 10 per cent less.

If we now take the principal advantage of the system into brief consideration, we will find that this system possesses:

The most perfect control over the distribution of the stress in different members.

The greatest degree of strength, the smallest amount of material used and smallest dead load.

The simplest method of erection in manufacturing and building of beams and girders.

A saving in erection, less cost for work and small incidental costs.

Dispensing with almost all forms and carpenter work at the place of the buildings.

Least construction height between top of floor and bottom of ceiling.

Straight ceiling.

The construction of lattice girders can be applied to all spans.

The Advisability of Constructing Highway Bridges of Reinforced Concrete

By LAYTON F. SMITH, Baltimore, in Concrete

THE question of good roads is being agitated each year more than the year before, and as a nation we are becoming more impressed with the fact that good roads are necessary for the well-being of the country. It is, of course, understood that the United States, being a new country of large area, and for many years sparsely settled with small communities widely separated, did not have the opportunity to construct fine roads before the railroads began to be built; and because the railroads became more extensive and extended all through the country, the need of fine macadam or telford roads was not early appreciated by the great mass of our people.

The farmers felt the need of good roads, but they were too poor to pay for them, while the dwellers in cities found that their money was needed for the paving of the city streets, and hence the suburban roads of America have been considered by foreigners a disgrace to the country. While good roads were desirable, the cost of building and maintaining them rendered their construction on the part of the counties in the various states practically impossible. Some of the important roads were kept in various conditions of good repair, but the balance were permitted to be whatever resulted from the character of soil over which vehicles passed in various kinds of weather and with varying frequency. As the cities produced a class who owned horses and carriages and desired good roads over which to drive in the neighborhood of the cities, action was taken whereby a few of the roads leading from the cities were rendered more or less fit for pleasure driving for a radius of about ten miles from the city limits. There were a few turnpikes which were kept in good repair for most of their length, but since the limit of pleasure driving is circumscribed and few people drive more than about twenty miles in an afternoon or evening, little care was given or money expended on the roads not contiguous to the cities.

When bicycling was popular and cyclists rode centuries, the condition of the roads became known to others than the farmers, and efforts were inaugurated to improve the highways, which resulted in much benefit to the country at large, but especially to the farmers who chiefly used the roads. Many counties now have road engineers who are employed to see that the best roads are obtained for the money expended, and many states have road laws, whereby the State will bear a certain proportion of the cost of road improvements in the various counties.

The greatest factor which is now contributing to the improvements of the roads is the automobile, owners of which are not satisfied to ride within the radius of twenty miles of a city, but who want to ride for hundreds of miles in their touring cars, and hence are agitating for good roads everywhere.

One of the requisites of good roads is good bridges, and in the past most of these have been on a par with the roads, very poorly constructed, and usually in very bad repair. Most of the longer spans are now steel trusses with wood floors, while of the shorter spans a few are stone arches, but by far the larger number are constructed of wood stringers, with plank floors nailed thereto. There are many counties which have several hundred of this latter class of structure, which are continually wearing out and requiring to be replaced or repaired; they are also the cause of many accidents,

resulting in injury to people and property and suits for damages against the counties. If these bridges could be abolished entirely, so as to stop the continual drain on the counties for their maintenance and the payments of damages resulting from suits which they occasion, both the counties and the individuals would be benefited; but there must be some method adopted to carry travel over streams and gullies, and hence there must be bridges of one class or another. Many counties have constructed stone or brick arches wherever possible, but such construction is not always suitable, because the conditions may not permit of an arch, which is itself expensive, and in most cases in order to replace the wooden bridge with an arch it would be necessary that the stone abutments on which the wood stringers rested to be torn down to be replaced by abutments suitable to receive the thrust from the arches. This is undesirable, for if the original abutments are in good condition or can be rendered serviceable for vertical loads at small expense, it is not economical to tear them down to be replaced by other abutments suitable for arches. At other times the construction of an arch might restrict the opening more than would be desirable or safe.

What is wanted is a construction which will replace the unsatisfactory and dangerous wooden part of the structure, which will rest on the abutments already constructed, which will not restrict the opening which it spans, and which will be indestructible and not need repair. The only type of bridge which will meet all these requirements is a reinforced concrete girder or slab structure, and more and more of these bridges are being built each year. At first thought one is inclined to think that the cost of a reinforced concrete girder or slab bridge is much greater than the cost of a new wooden structure such as it would replace, and such is the fact in some localities, but in many places the cost of a reinforced concrete structure will prove less than a preliminary estimate might indicate, for frequently all the sand and gravel needed in such construction can be obtained from the bed of the stream which it spans, and the lumber in the wood bridge can be used for the rough centering.

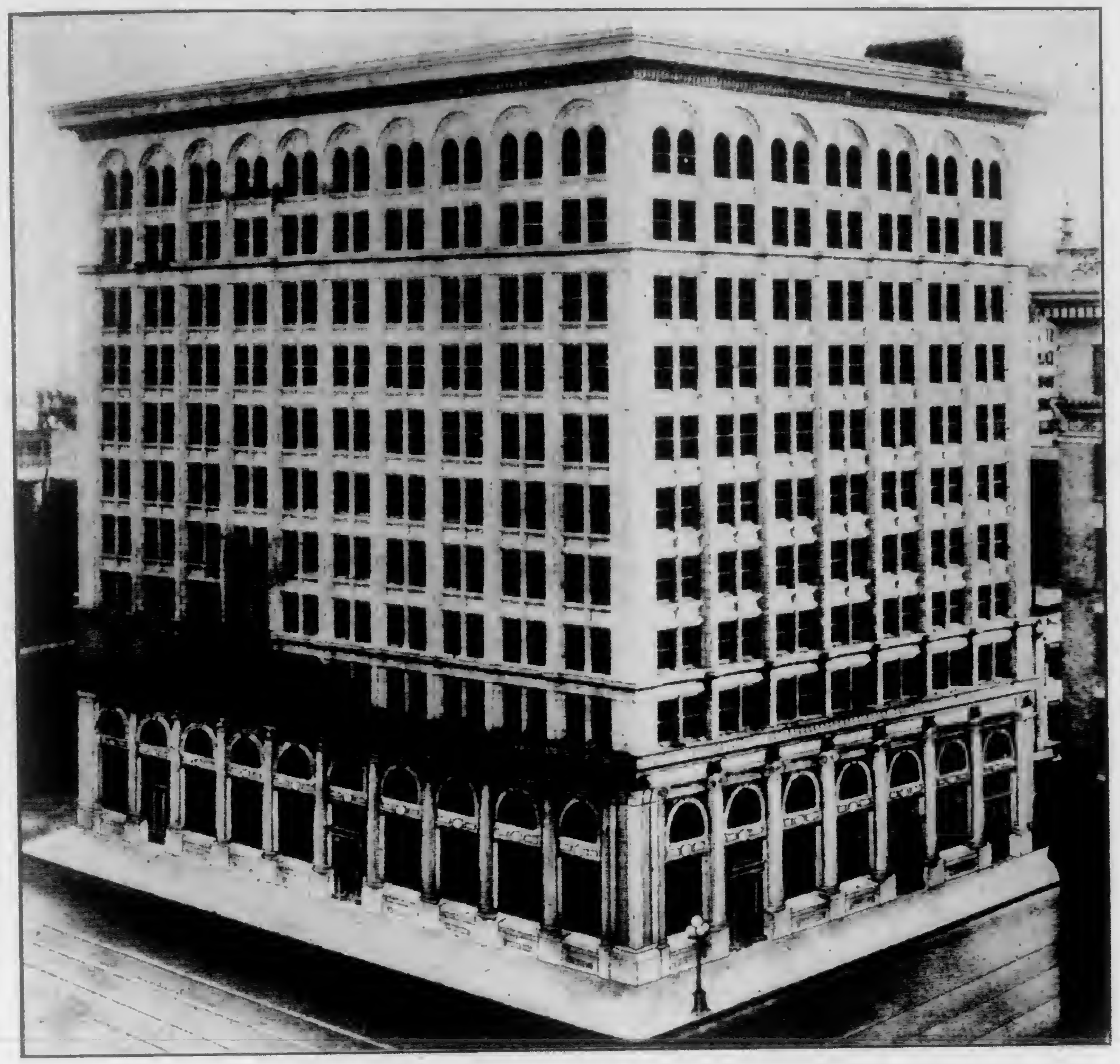
From experience the writer would advocate the use of a bar to which the members which are to resist shear in the finished structures are rigidly attached, and that the work be done by the counties' own forces. By using such a bar as described there can be no chance of the shear-resisting members being left out of the structure, and by using the counties' own forces the superintendents will become familiar with the plans and construction and do better work; at the same time the road engineer will exercise more thorough control and supervision over the structure.

* * *

Cost of House Construction

As indicating the advance which has occurred in the past few years in the cost of house construction in certain sections of the country, at least, the following from an Evansville, Ind., paper is impressive:

"It was only a few years ago," said a local architect, "that the estimate on a room was $200. That is, if a man wanted to build a five-room house we figured it would cost him about $1000 for average construction. Today the price is practically double, due to the increase in the price of building material and the higher wages paid to the contractor and workmen. We now estimate about $400 to each room, making the cost of a modern five-room house about $1800 to $2200.



Security Savings Bank Building, Los Angeles — John Parkinson and Edwin Bergstrom, Architects
Equipped With Otis Elevators — Machinery and Electrical Co., Heating Engineers

Sand-Lime Brick

The manufacture of sand-lime brick is rapidly becoming an important industry in the United States and may become as profitable here as it has been in Germany for the last ten years. A sand-lime brick is essentially a mass of sand cemented by hydrous lime silicates. The bricks can easily be made with a crushing strength of over 4000 pounds per square inch, exceeding in this respect some sand-stones, also with a tensile strength of over 200 pounds per square inch, and they withstand severe freezing, thawing, and fire tests. When made with pure sand their color is white, but by the addition of manganese or graphite in varying proportions, gray or pink brick may be produced. Both common and front bricks are made. Their chief merits seem to be their white color and their somewhat lower cost of manufacture than that of clay or shale bricks used for building fronts and for ornamental purposes. It is claimed that they make rigid structures and that they are in every way safe and satisfactory as building material.

A plant for making sand-lime bricks, near Sayreton, just north of Birmingham, Ala., is briefly described in a paper by Charles Butts in the annual economic bulletin (No. 315) of the United States Geological Survey for the year 1906. The paper includes a list of publications dealing with the subject of sand-lime bricks.

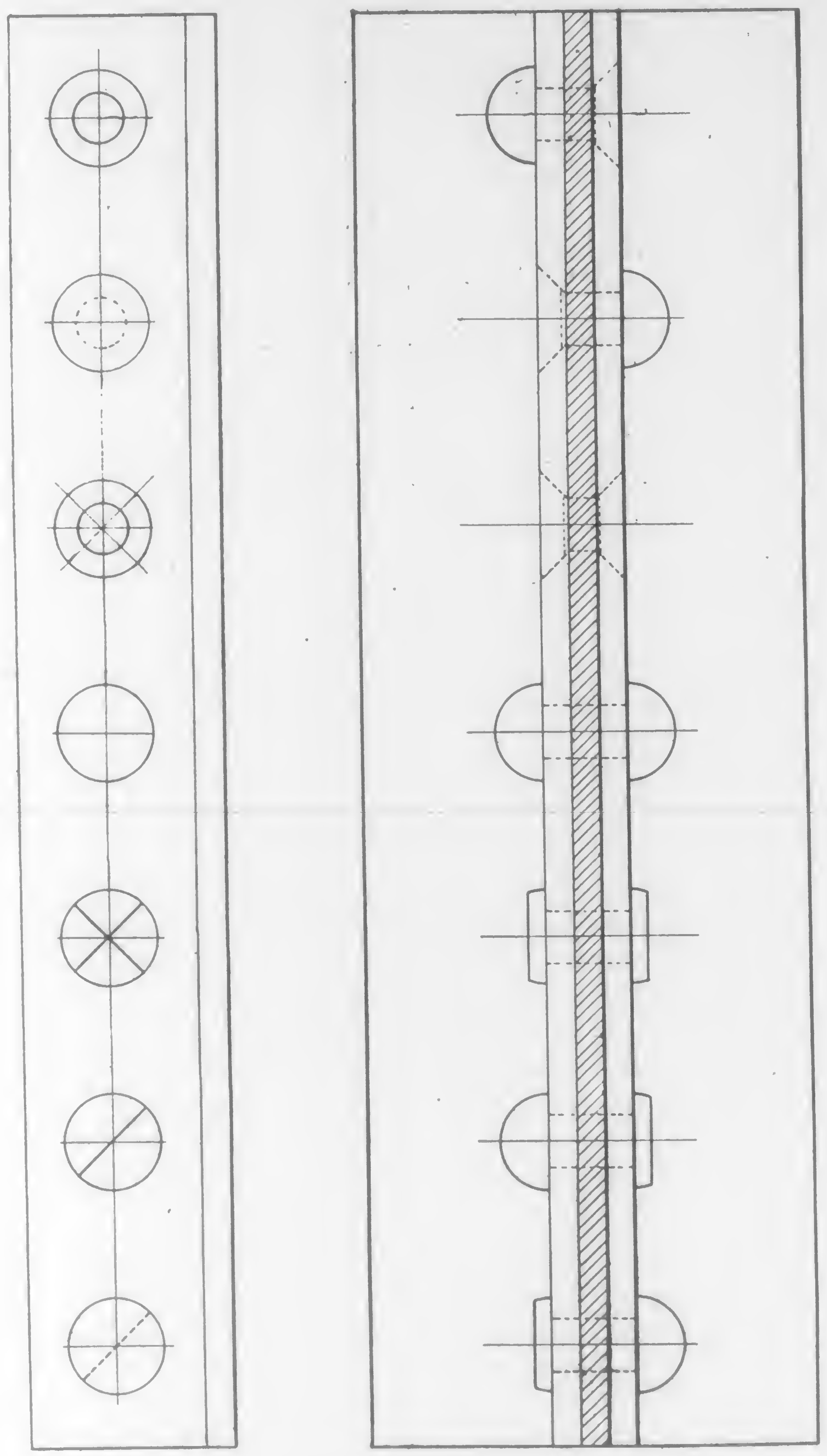


Figure 3. Common Signs for Shop Rivets

A Few Notes on Riveting

By E. O. RITTER

AN ESSENTIAL feature in the construction of steel buildings and bridges is the manner in which the different parts are fastened together. This is frequently done with bolts, but a much more satisfactory job results when rivets are used. The latter are either driven by hand, or by machines operated by air, steam or water power. Whatever method is used, the course is practically the same.



Fig. 1. Showing Rivets Driven "Too Short", Also Heads Not Concentric With the Holes

The rivet is heated, placed in the hole through the pieces to be fastened together and held in place while a head is forged on the projecting shank. In order to get good rivets it is important that the holes in the different parts through which the rivet must pass, should match exactly. A good way to insure this is to punch all holes one-eighth inch or three-sixteenth inch smaller than desired, and ream them to the proper size after the different parts are assembled. This makes the holes perfect and does not necessitate the use of drift-pins, which are used to force through holes that do not match, enlarging them and often tearing or otherwise injuring the metal around the hole, and which is likely to start crystallization.

The finished hole should be one-sixteenth inch larger than the diameter of the rivet to be used, and all punch or reamer burrs should be removed from the sides of the holes. Machine riveting is cheaper and better than hand-riveting, and can be very easily distinguished, particularly so when rivets have to be taken out. The steady pressure brought on the rivet by the machine, holds it tightly in place and compresses the shank into and completely fills the irregularities of the hole, which is not always the case with hand-riveting. By whatever method the riveting is done, it is important that the material to be riveted is first drawn tightly together with bolts, and the bolts removed as the rivets are inserted.

Care must be taken in the heating of the rivets so as not to burn them, as burned rivets are weak and brittle, and it is almost impossible to detect a burned rivet after it has been driven. In many cases the head may look perfect, while the shank is badly damaged. The burning of rivets is not always accidental. Many times if rivets are a little too long to exactly fill the snap, the "heater" will "waste" them; that is to say, bring them to a melting heat, so that parts will crumble off. This is very bad practice for steel rivets, as they should never be worked at a greater heat than "orange-color." Iron rivets may be brought to the

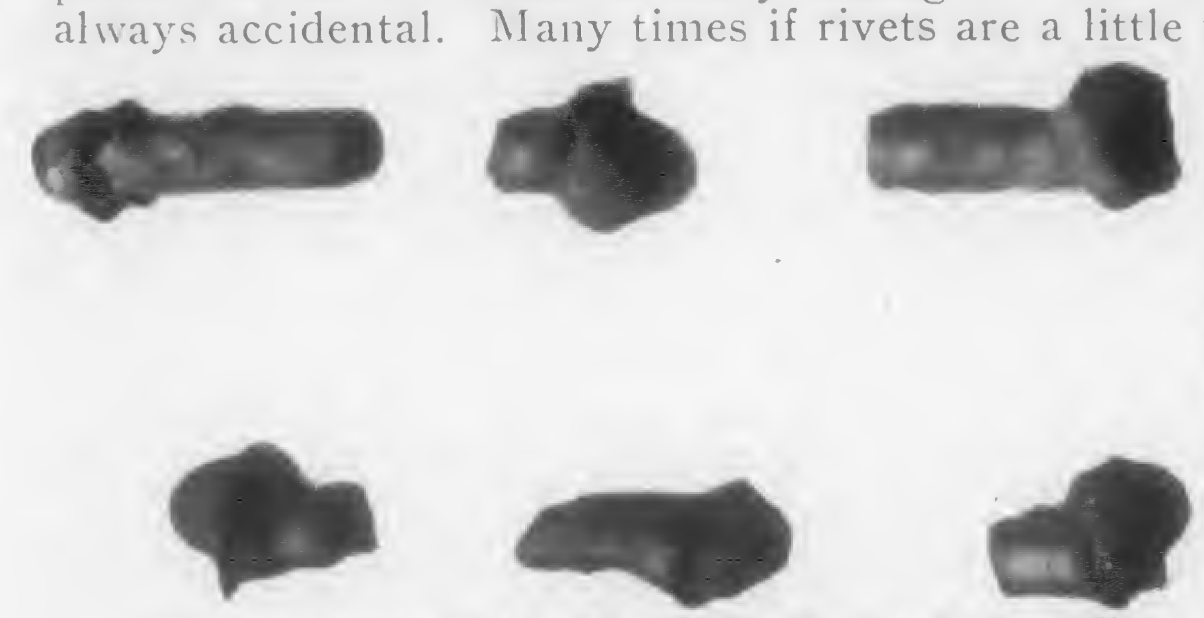


Fig. 2. Showing Rivets Defective for Various Reasons; Also Burned Rivet Before Driving

waste or wash heat without serious injury. In hand-riveting it is important that the rivets be uniformly heated all over, and not hotter on the point than on the head, otherwise the blows which are sufficient to expand the metal and cause it to fill the hole will do so only on the hot end, leaving the other end loose in the hole.

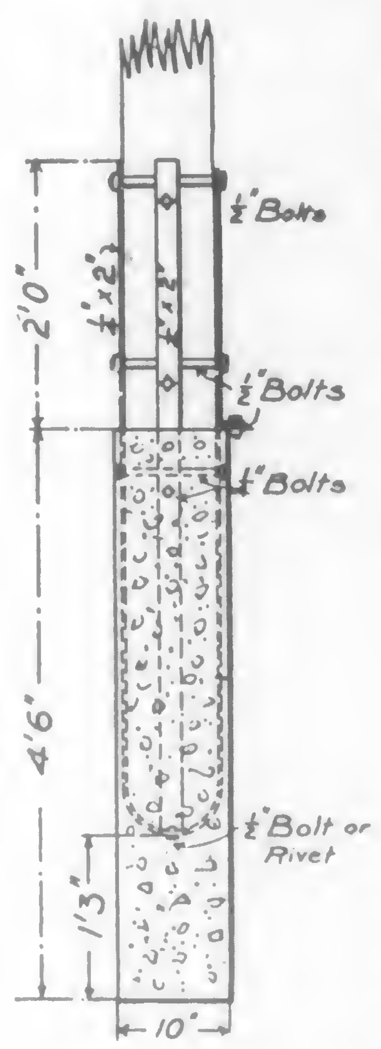
Loose rivets are often made to appear tight by going around the edges with a caulking tool, or chisel, and frequently by placing a snap sideways upon the rivet and striking it one or more blows with a hammer. This simply bends or wedges the rivet in the hole, does not make it any better, and should by no means be allowed. After a little practice, loose rivets can easily be detected by tapping them with a small hammer. The hammer will bound from a tight rivet, but not so from a loose one, and one can tell by the jar of the handle, whether the rivet is loose, even where no rattle is heard, nor movement detected by the eye.

Proper attention is seldom given to field riveting. Many architects are particular about inspection of rivets in the shop, insisting that they all be tight, and perfect in other respects, while little or no attention whatever, is paid to the riveting of field connections, the same being left entirely to the discretion of the workmen. This is certainly not good practice, as a structure is no stronger than its weakest point, and if the workmanship is to be good in one instance, why not make it so in its entirety.

* * *

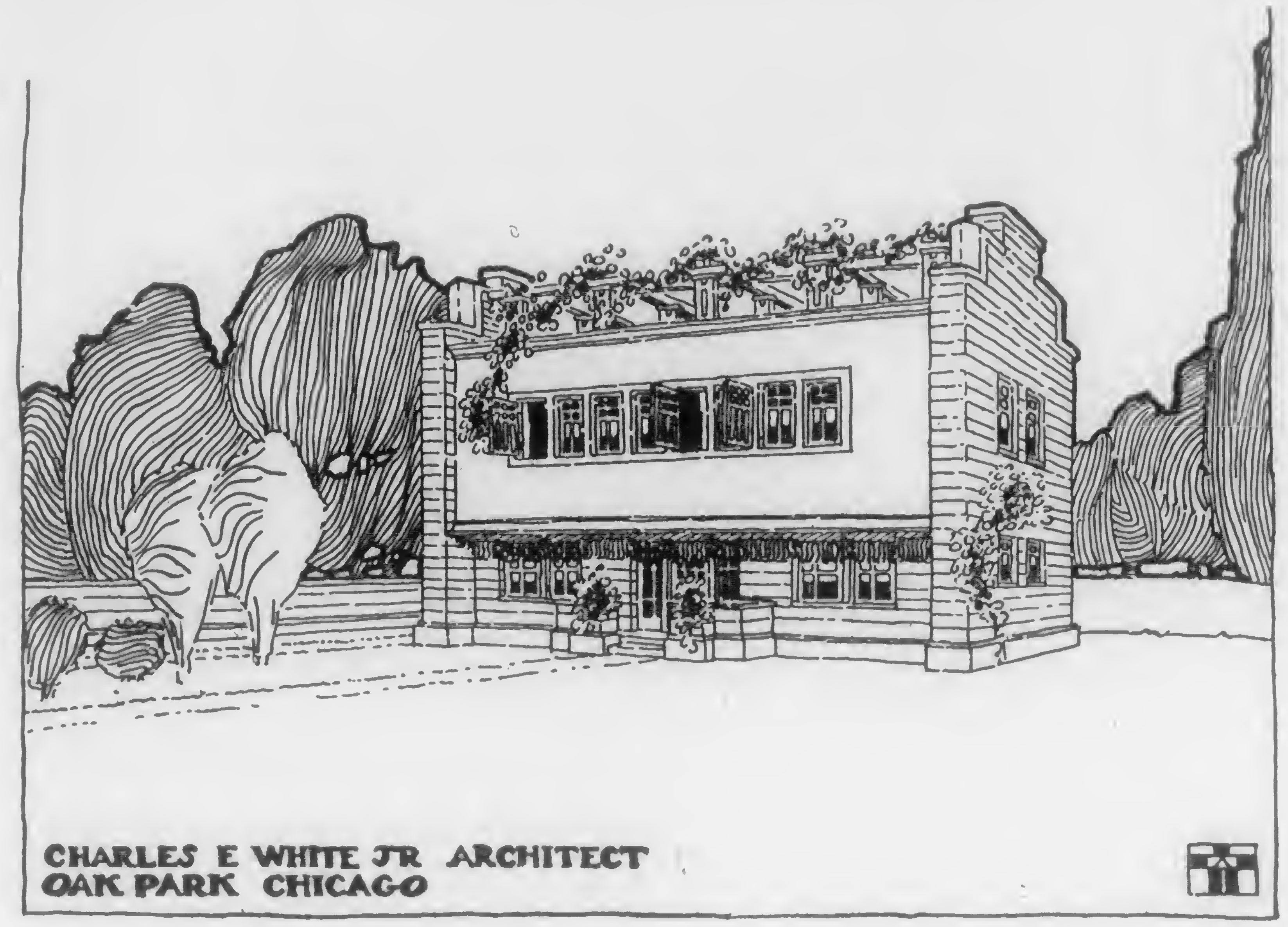
Cost of Making and Setting Concrete Bases for Wooden Poles

THE accompanying drawing from Engineering-Contracting shows a concrete base for transmission line poles invented by Mr. M. H. Murray of Bakersfield, Cal., and used by the Power Transit & Light Co. of that city. Their bases are molded and shipped to the work ready for placing. They weigh about 420 lbs. each. One base requires 37½ lbs. of 2x¼ in. steel bar, 40 lbs. of Portland cement, 3 cu. ft. of broken stone or gravel and enough sand to fill the form or mold, which is 10x10 ins. by 4½ ft. Unskilled labor is employed in the molding and two men can mold ten bases per eight-hour day. The cost of molding is as follows per base:



2 men at $2 per day	$0.40
Brace irons per set	2.50
1/9 cu. yd. stone at $4.05	0.45
40 lbs. cement at 1½ cts	0.60
Sand	0.15
Total cost	$4.10

In the work for the company named above two men at $2 per day each set five bases in eight hours, making the cost of setting 80 cts. per base. The bases were sunk to a depth of 3 ft. 3 ins. In many cases they were placed under poles without interrupting service by sawing off the pole, dropping it into the ground, placing the new base and setting the sawed-off pole on it and bolting up the straps.



A Fireproof Dwelling of Hollow Tile

By CHARLES E. WHITE, JR., Architect

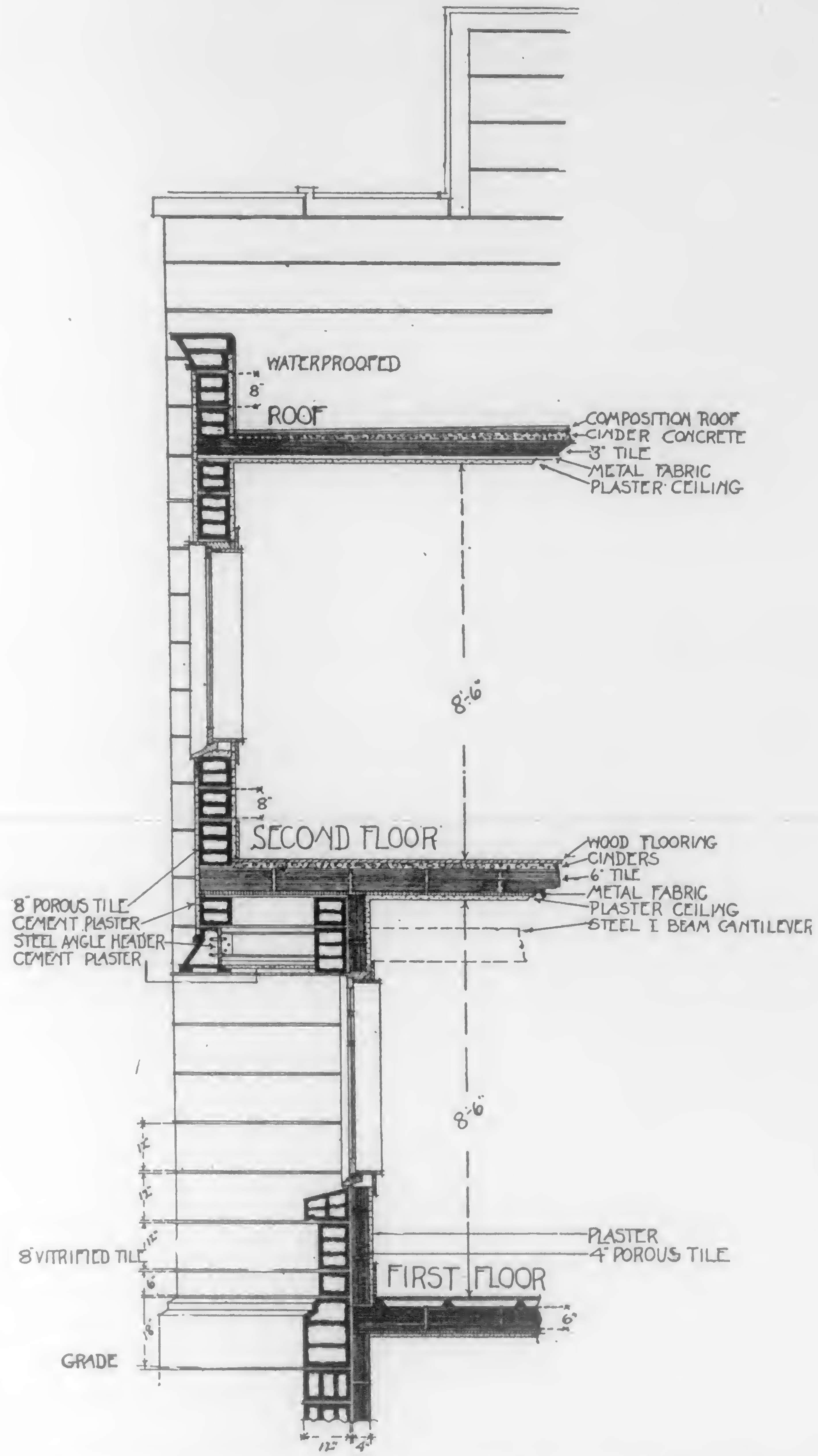
OF ALL the materials for dwellings of masonry construction, materials of clay have been the most used. Of all clay materials, brick has been generally selected by both architect and owner. Brick successfully solves the problem as to appearance and permanency.

Tile has now come to be a marketable and easily obtained material in most markets through its increasing use as a fireproof covering for large buildings. It is only within a short time, however, that, in this country, it has been seriously considered as a substitute for other more commonly used masonry materials.

The slight demand for tile in dwelling construction is chiefly the fault of the manufacturers. Their attention has been almost entirely confined to the exploitation of their material merely as fireproof covering. The demand for tile for this purpose is enormous, so we cannot expect the manufacturers to take the care and time necessary to put their material on the market, and create for it a demand for its more universal use as an all around masonry material.

On the other hand, the architects, inclined to conservatism, cannot be expected to go out of their way to exploit a material with which they are not familiar. The good points of tile have been demonstrated to them so far as fireproof qualities go, and they have been quick to seize the material for this use, but its more general use as a constructive material has not occurred to the profession at large.

In spite of lack of exploitation on the part of manufacturers, and lack of appreciation on the part of architects, tile is today one of the best of materials for general use in masonry structures, says Fireproof Magazine.



Vertical Section of Fireproof Dwelling, Showing Materials and Construction

The first point in its favor is its reasonable cost. Wherever clay is to be found, tile can be manufactured—and this is pretty much everywhere.

Further points of especial interest to architects are color and texture. All shades of color can be obtained, from light buff to deep chocolate brown, depending upon the chemical consistency of the clay in the different parts of the country. Any or all textures known in architecture can be utilized.

Another important point in favor of tile is its plasticity. Blocks can be furnished in any size and any shape. Plain or molded surfaces are easily produced. Any bit of ornament that a sculptor can model with his thumb and fingers, is just as easily produced in terra cotta as in the sculptor's sketch.

The question of permanency is successfully answered in terra cotta. Fire and wear make no impression upon it. The large size of the units, as compared with brick, means less joints, less labor, and increased architectural appearance.

Perhaps the greatest of all facts concerning tile especially appealing to the architect is its factor as a new material—a material still in the vigor of its youth, as concerning universal application. No weak, hackneyed, misfit use of tile has appeared yet, and the designer feels that a fresh opportunity has been given him to think and work in a new medium. The very nature of tile, different as it is from all other materials, is an incentive to him to strike out into new paths, unhampered by false ideas of precedent, or the restrictions of habit. Sympathy and sense are the only qualifications necessary in the architect, when working in tile.

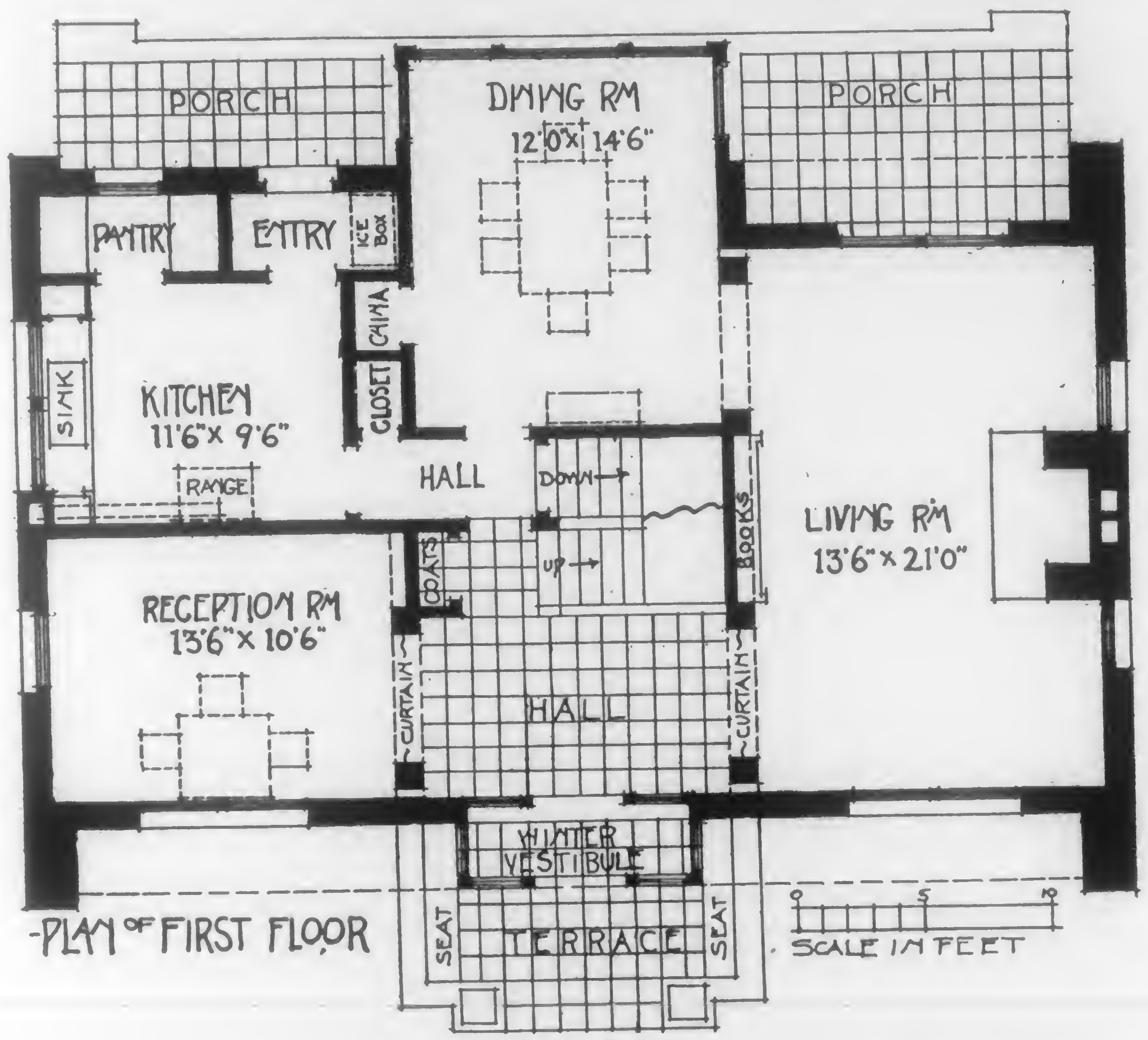
The project as illustrated herein indicates an attempt to use tile of stock pattern in a consistent, simple manner, without extravagant architectural accessories. Moderate cost, architectural appearance and utility and constructive permanency have been especially borne in mind.

Hollow tile blocks as a basis of construction, covered with cement plaster, have already been used in dwelling house construction. This project includes the use of the material in like manner, and also its use as an independent material without any outside covering.

Tile, with its beauty of color and texture, and its splendid weathering qualities, need not be covered with any other material to obtain either permanency or architectural appearance. Indeed, one of the greatest points in favor of tile is the breadth of its scope in the interpretation of the architect's ideas. Cover it, if you will, or leave it in its natural state; with either method it proves an ideal medium.

The tile patterns used in this design are all stock patterns, selected from the manufacturer's catalogue, with the exception of the case course and the two molded courses at the top and bottom of the second story projecting walls. Cornice moldings are carried in stock, but none of them was adaptable for this project. Special moldings, of simple cross section, are easily made up from the architect's drawings at moderate cost. In the designing of cornices, it is not, therefore, necessary to confine one's self to stock patterns.

The wrong way to design a building of tile is to use a plan conceived for a building of frame construction and attempt to fit it into a design for tile. Such a method cannot, by any amount of ingenuity, give successful results. A South Sea Islander cuts but a sorry figure in a swallow tail coat, no matter how picturesque and admirable he may be in his native costume. So it is in architecture—a building designed for one material cannot be successfully executed in any other. A tile building should express the simple solidity of masonry. Its sympathetic use along this line will be organically right.



-PLAN OF FIRST FLOOR

This design was conceived, broadly, as a quadrangle in plan, with a solid wall at each end, terminating in a chimney top. These end walls and the exterior walls of the first story are of vitrified hollow tile, eight inches thick, with the cells extending horizontally. Vitrified tile of this pattern have an impervious semiglazed surface, a rich chocolate brown in color. Such a surface is attractive and permanent, and insures a damp-proof wall. The tile should not be selected for uniform color, as the variation of tone is an excellent quality in the wall. It produces an agreeable texture, quite necessary in the design.

The first story exterior walls are lined with four-inch hollow porous tile. The inside partitions and the exterior walls on the front and rear, second story, are also of porous tile, three inches thick, for the inside partitions, and eight inches thick for the exterior walls. This porous tile receives the plaster direct, without laths or furring strips. Any moisture coming through the joints in the wall cannot get through the porous tile to stain the inside plastered surface. The trim is nailed directly to the tile with corrugated nails.

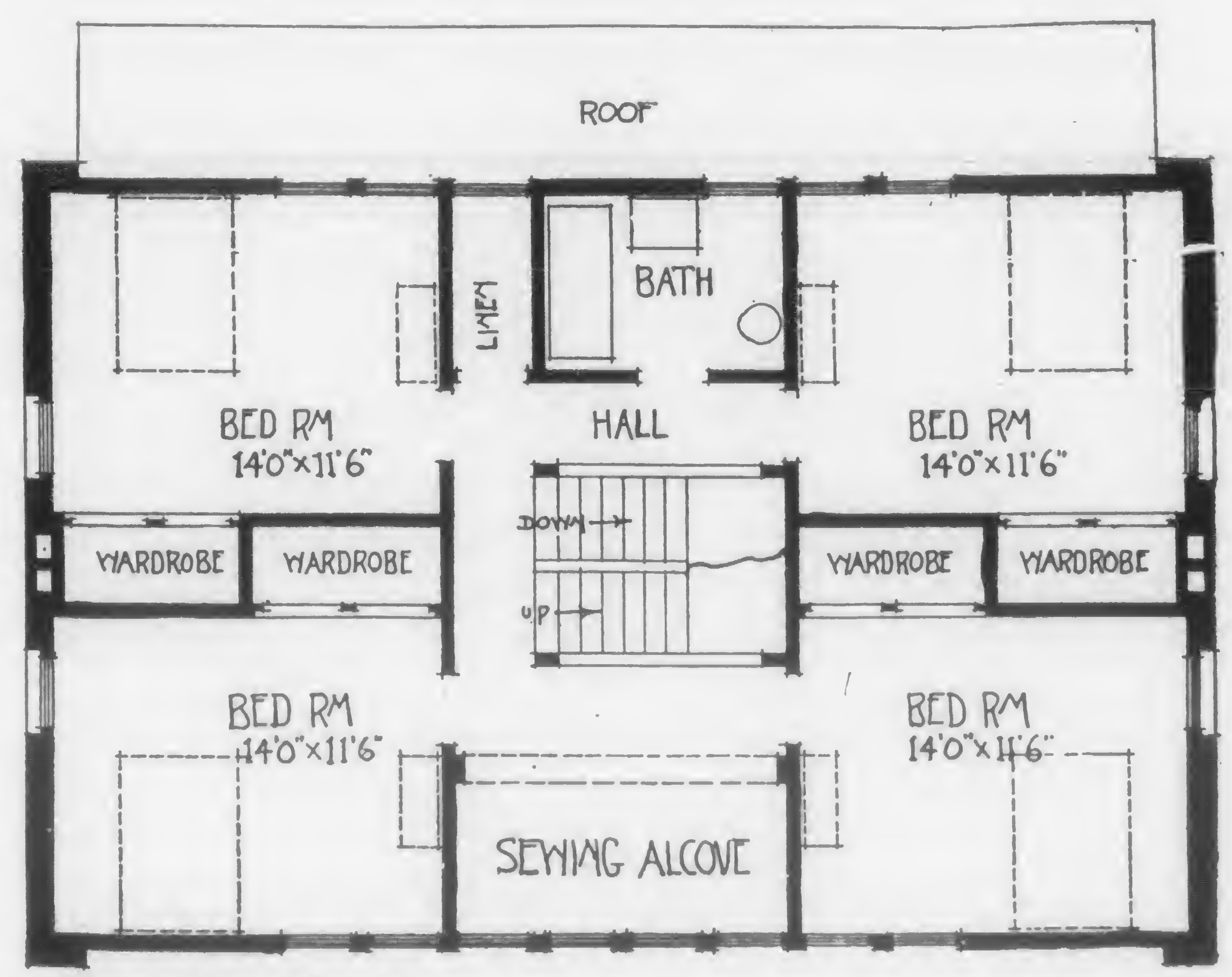
The front and rear exterior walls on the second story are covered on the outside with cement plaster, applied directly to the porous tile.

To withstand the shock of slamming doors, in the thin inside partitions, the horizontal joints in the partitions, for a distance of two feet from the door frames, are reinforced with pieces of galvanized metal fabric, imbedded in the joints.

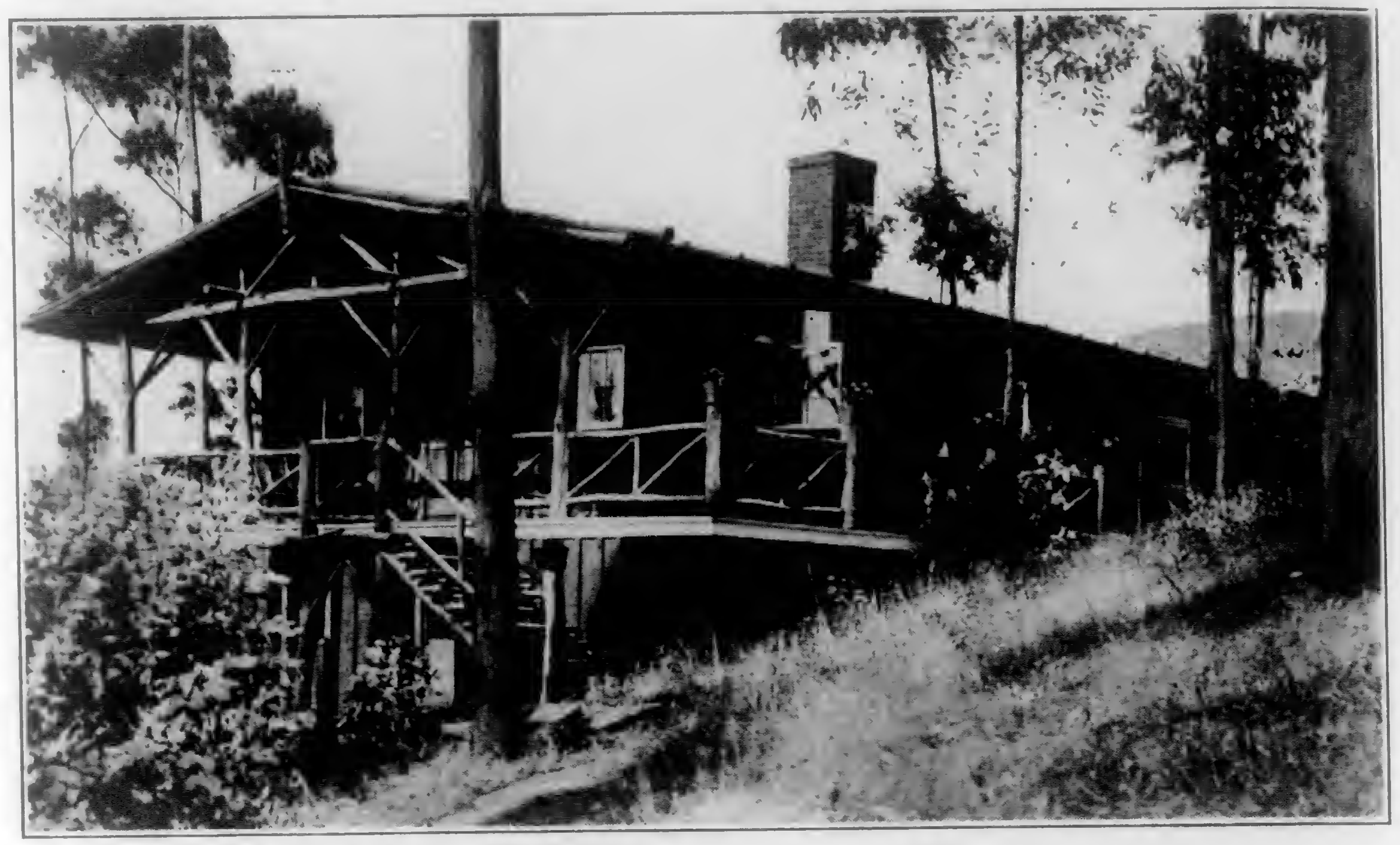
The fireproof floors and roofs are supported directly upon the porous tile lining of the outside walls. To withstand this greater load these tiles are laid with the cells vertical. Under ordinary loads the tile may be laid with the cells horizontal. The tile in the inside partitions are also laid with the cells vertical for convenience in extending water, gas and heating risers to the second story.

The floors and roof are of the system of fireproof construction known as the "Johnson" system. This system consists of metal fabric, reinforced with steel rods. The fabric is plastered underneath, and this plaster is the ceiling of the rooms below. The top of the fabric is covered with hollow tile, finished with cement, or with the ordinary wood floor boards, as desired. When wood flooring is used, furring strips bedded in cinder concrete are laid upon the tile, and the wood flooring is applied to the furring. This system of construction can be designed to withstand any load, extending over varying lengths of span, by increasing or decreasing the size of the reinforcement in the fabric and the thickness of the tile blocks.

In a fireproof design, the flat roof is the most practical, as it eliminates a great deal of structural steel that would be required by a sloping roof. The hollow cells of the roof tile perfectly insulate the building against heat and cold. The roof is laid precisely like the floors. Cinder concrete is applied to the top side of the tile, and graded to drain the roof to the four corners of the building. Conductors extend from these corners down through the hollow piers. The coping walls surrounding the roof are strengthened on the front and rear with reinforced metal lath and plaster. The plaster is covered with waterproof metallic paint, so that the roof water, in a



-PLAN OF SECOND FLOOR



The Pretty Bungalow of W. J. Watson, Oakland

pouring rain, cannot permeate the wall. A flat roof provides an excellent opportunity for a roof garden. At moderate cost, upright supports, with horizontal timbers overhead, can be erected, on which to train vines and flowers. The house owner can thus add another bit of comfort and charm to his home.

All windows of ordinary width, in a tile building, may be covered with flat tile arches of stock pattern, without the use of supporting steel. In this project the long group of windows on the second story is covered with an angle iron supported by pieces of gas pipe set up vertically in the hollow window mullions.

It will be noticed that the loads under the steel beams, projecting cantilever fashion for the support of the overhanging second story, are concentrated on the piers below. To withstand this additional load these piers consist of vitrified tile, with the cells extending vertically. Such tile are carried in stock by the manufacturers for work of this character.

With the firm masonry base of a fireproof floor it is an easy matter to lay a finished tile floor in halls and bathrooms, and in the hearths of fireplaces. A beautiful red, dull glazed tile, twelve inches square, can be obtained for this purpose.

As the designing and building of tile buildings progresses, we may expect that, for more pretentious designs, the manufacturers will provide stock tile units, of all sizes, with surface glazes in many colors. The time is approaching when we may go into the open market and select building tile in the beautiful green, yellow, brown and red tones, already obtainable in architectural terra cotta, and the streets of our towns and villages will sparkle with color. Any mason can lay tile. It only remains for the owner and his architect to appreciate it, and demand it, when it will be forthcoming.



Fairmont Hotel, San Francisco

Woman Architect Who Helped Build the Fairmont Hotel

By JANE ARMSTRONG, in the Call

"IS THE building really in charge of a woman architect?" I asked the foreman, who was directing some finishing touches to the ballroom of the Fairmont Hotel. The man read me a powerful sermon of just three short sentences, punctuated with the earnestness of a reform orator. "An architect's an architect," he said, "and you can count them all on the fingers of one hand. Now, this building is in charge of a real architect and her name happens to be Julia Morgan, but it might as well be John Morgan."

Which statement is not as sphinxlike as it looks in type. Illuminated by the light of the man's countenance its meaning is crystal clear. Here was an artisan who would not parse "work" as feminine gender. To him it was work well done, and what was the use of dragging in a petticoat?

When the "master of a good workman shall set us to work anew" I am sure that foreman will draw "the Thing as he sees It for the God of Things as They Are!" Else how could he divest himself of all masculine prejudice and insist that it is "Julia Morgan, architect," not "Julia Morgan, woman architect."

And while I waited for Julia Morgan, architect, I ruminated upon woman's province and power. There was once a small boy who wouldn't play with "sissies," and so I had a very dismal time of it until one dazzling day he discovered that I could really spin a top. I didn't just spin it "fine for a girl." I could make it sing as loud and long as the chubbiest fisted boy on the block, and forthwith I was admitted to the mighty Brotherhood of

Top Spinners. And since men are only boys grown tall I fancy that when a woman enters the arts and sciences and achieves according to the lines laid down for her brothers she is duly and justly accredited to the craft.

On the heels of this conclusion came Miss Morgan herself—a small, slender young woman, with some thing so Quakerish about her that I felt all preconceived notions come tumbling about my head. I knew that Julia Morgan was a Beaux Arts graduate, and through my mind there trooped a bizarre procession of girls who have studied one thing or another in Paris. They usually come home dressed in a color scheme of the impressionistic school, with their talent merely a by-product of a wonderful new set of mannerisms and a novel and fuzzy way of doing the hair. Yet here was a young woman dressed in drab and severely hair pinned.

Before I had time to give decent burial to these preconceived visions Miss Morgan dispelled another illusion. We were standing in the main dining-room, which tones into old ivory, with wide washes of dull gold. At one end is a room in softest shades of gray, like a demure young widow in second mourning. At the opposite end, through the broad portals, I caught a glimpse of the banquet room, all in scarlet and gold, like "honey splashed with port."

"How you must have reveled," I said, "in this chance to squeeze dry the loveliest tubes in the whole world of color."

Miss Morgan smiled and answered: "I don't think you understand just what my work here has been. The decorative part was all done by a New York firm.* In fact, most of it was finished before the fire, and has been restored on the same lines and in the same tones. My work has all been structural."

"Structural!" The word pegged my imagination down to earth again. For in the back of my mind I had been wondering whether architecture is not a fine field for any woman with a sensitive feeling for color and form. But "structural" conjured up a vision of strength of material and all sorts of problems which no amount of sensitive feeling would solve.

Miss Morgan took me into the Laurel Court, which is between the foyer and the main dining-room. "In the rehabilitation of this room," she said, "it was necessary entirely to replace the glass dome, and you have no idea how much important detail is involved in a skylight of such magnitude."

"But I suppose you found the other details of the room more interesting," I hazarded, pointing at the trellis work which criss-crosses the walls, arbor fashion, and the clusters of grape festooning their graceful golden length over the wall panels.

"Baumgarden of New York," quoth Miss Morgan, tersely. "I was not called into the building until after the fire, and on this floor my chief work has been the staircases, skylights, the bar, offices and general rehabilitation. From the first conception of the building the mural decoration has not been in the architect's province."

It is difficult for a mere woman with no more serious problem in life than the construction of a new Easter bonnet to realize what a compliment it is to the sex that a woman architect was chosen to restore the Fairmont. When I had gone over the entire building with Miss Morgan I fully realized that foreman's assertion that her name happened to be Julia Morgan, but it might as well have been John Morgan.

To be sure, she has had the best training that the world affords. Miss Morgan was graduated from the University of California and then spent several years at the Beaux Arts, the great French school of architecture. She had special training for an undertaking like the Fairmont, having

* Schastey & Vollmer, formerly of New York, and now located at 1930 Van Ness Avenue, San Francisco, did much of the decorative work in connection with Baumgarden.

studied the construction of one of the finest hotels in the world from the foundations to the last detail of convenience and elegance.

So she was called into the task which the present owners of the Fairmont undertook when they set about the rehabilitation of the hotel with a determination to have it in readiness for the anniversary of the city's baptism by fire. Though the exterior of the huge stone structure resolutely withstood the fierce onslaught of flame, the interior was still in the decorator's hands and with cruel persistency the fire sought out the inflammable material scattered around and flame leaped to meet flame until the beautiful interior was ruined.

In its present state of completion the building does not show nearly as much of Miss Morgan's work as it will when entirely finished. Even the garden that slopes down to Mason street has been laid out by this clever young woman and will be an attractive foreground for the marine view, which is framed in every one of the commanding windows of the building.

After all, women are clannish—for when I was crossing the bay that night and saw, rising far over the waterscape, the Fairmont, fitting the skyline without a wrinkle, I wanted to emblazon above it the part that a Woman has played in its construction. And the fact that the foreman nobly insisted it is Julia Morgan, Architect, will not prevent me from hyphenating it as Julia Morgan, (Woman)-Architect.

* * *

Carelessness in Concrete Construction

RICHARD L. HUMPHREY, president of the National Association of Cement Users, has examined many of the cases of collapse of concrete construction and pronounces his opinion that in every instance the fall of the structure has been due to carelessness of construction. From observation of other concrete buildings in process of construction, he is satisfied that the same errors are being repeated and that further collapses will surely come unless the officials of the cities take the question in hand. He believes that in order to meet this problem squarely, every city in the United States should revise its building laws in such a manner that either the owner or the contractor of a concrete building shall be compelled to employ a competent inspector whose duty it shall be to follow every detail of the construction from the beginning of the foundations to the completion of the roof. New York, St. Louis, Boston and Philadelphia have either prepared or are now preparing new regulations governing concrete construction.

The science of concrete construction is not yet thoroughly settled, and until it is, the greatest care should be taken in the use of the material. Concrete, by reason of its superior qualities, especially its resistance to fire and its cheapness, is being used extensively in these days, and will be employed still more in the future. It is a comparatively new material, and until its properties are fully known and appreciated, the greatest safeguards should be thrown about it. There is a prevalent idea that it can be used by unskilled laborers. That is the error which has led to serious consequences. While it is true that unskilled labor can be employed to a large extent, concrete construction requires the same care and attention to details that is demanded by first-class construction with other materials.

Each failure tends to discourage the use of concrete, for the reason that it is almost universally attributed to the material rather than to the improper conditions under which it is used. The failure of a reinforced concrete structure by reason of improper design, poor materials or bad workmanship is no more an argument against its use than the collapse of a steel structure under similar conditions is an argument against the use of structural steel in construction.

Interior Decoration



By A. W. REIBER*

DECORATION is the assembling of form, line and color so arranged as to produce perfect harmony.

In this advanced age of enlightenment and progress, when the abilities of the architect, designer and decorator are combined to design and execute the artistic interior, and the art of home-furnishing and decoration is being studied more and more by the individual, the question of decoration is a most important one.

The first question to be decided is that of the style the room or interior is to represent, whether it should be of strictly Period design or of a more modern style.

Perhaps the room is still in the rough state, while woodwork, furniture, hangings and color schemes are yet to be planned in their entirety. The detail of interior finish, furniture, carpets and color schemes must be in perfect harmony in order to produce the proper results.

Then again we may have a room which has already been given a style by the builder or by the architect; that is to say, the interior finish is complete, and it remains for the decorator to suggest and assemble the proper carpets, furniture and hangings, to be in keeping with the detail which is already in place. This is where the ability and taste of the decorator is called for.

In a great many cases these furnishings are designed and manufactured especially for the room, as it is not always that the right articles can be found at hand on the floors of our furniture shops.

There was a time when the gentleman in need of a piece of furniture would call in his favorite cabinet maker and the easy chair or the fireside

* Mr. Reiber was for five years associated with the John Breuner Company of San Francisco. He is now the senior member of the firm of A. W. Reiber Company, 1607 Broadway, Oakland.



Dining Room in a Pacific Avenue Home, San Francisco
Designed and Furnished Under Direction of A. W. Reiber



Another Room Which Speaks for Mr. Reiber's Skill

Interior Decoration



By A. W. REIBER*

DECORATION is the assembling of form, line and color so arranged as to produce perfect harmony.

In this advanced age of enlightenment and progress, when the abilities of the architect, designer and decorator are combined to design and execute the artistic interior, and the art of home-furnishing and decoration is being studied more and more by the individual, the question of decoration is a most important one.

The first question to be decided is that of the style the room or interior is to represent, whether it should be of strictly Period design or of a more modern style.

Perhaps the room is still in the rough state, while woodwork, furniture, hangings and color schemes are yet to be planned in their entirety. The detail of interior finish, furniture, carpets and color schemes must be in perfect harmony in order to produce the proper results.

Then again we may have a room which has already been given a style by the builder or by the architect; that is to say, the interior finish is complete, and it remains for the decorator to suggest and assemble the proper carpets, furniture and hangings, to be in keeping with the detail which is already in place. This is where the ability and taste of the decorator is called for.

In a great many cases these furnishings are designed and manufactured especially for the room, as it is not always that the right articles can be found at hand on the floors of our furniture shops.

There was a time when the gentleman in need of a piece of furniture would call in his favorite cabinet maker and the easy chair or the fireside

* Mr. Reiber was for five years associated with the John Breuner Company of San Francisco. He is now the senior member of the firm of A. W. Reiber Company, 1607 Broadway, Oakland.



Dining Room in a Pacific Avenue Home, San Francisco
Designed and Furnished Under Direction of A. W. Reiber



Another Room Which Speaks for Mr. Reiber's Skill

chair was designed and built to fit the needs and taste of the individual who was to occupy it.

Later, with the increasing population and the demands of commercialism, came the age of machinery and here and there furniture factories were built.

There are now a number of factories which are bending all their efforts to produce artistic furniture of Period as well as modern styles, and the well-regulated decorative shop that caters to the fine trade is equipped to produce and furnish whatever is necessary to decorate and make the home complete, so there should be no excuse for the interior that is not properly furnished.

The great trouble in determining how far the decorative quality shall prevail in a room is due to the fact that one does not from the outstart determine the use of the room.

The reception-room, the ball-room, the room for assemblies, is one kind of a room and may be considered simply as a frame for your guests; but the room that is a living room, the room that suggests home, and that we enjoy because it is beautiful and because it reflects certain sentiments or associations, is quite another kind of a room, and should be treated in a different spirit.

The room which is expressive must be conspicuous in distinct features. Having a room to furnish, the style and use of the room should first be determined upon. That done, the style should be carefully followed for all its decoration and beauty.

All such articles as are not in strict keeping and harmony with that particular style should be carefully omitted from the interior.

Only when the question of furnishing and decoration is taken up and carried out systematically can good results be expected and acquired.

Let us glance for a moment at the typical room so often found in our modern homes, whether it be reception-room, drawing-room or parlor.

Here we may find the wall covered in paper or fabric of delicate design, while the hangings and draperies were probably placed as an after consideration. Under these hang lace curtains, good in individual style, but entirely out of keeping with either wall or hangings. The portieres are perhaps of velour with heavy metal or leather design, and there is a Turkish rug upon the floor and a conglomeration of mahogany and gold furniture.

To call this assortment good taste would be a misunderstanding of the word.

How often we enter a room which is furnished—we may say lavishly. Plenty of money has been expended on the furnishings, yet the different parts of the setting are entirely out of harmony with each other.

Here and there a piece of furniture or other article stands out and jars against its neighbors, others seem to approach one as though asking to be released from their surroundings. To feel at ease in such a room is asking the impossible.

The quality and price of a fabric or an article of furniture is not of as much importance as style and harmony. The placing of an expensive paper or fabric upon the wall of a room does not make that room a style.

Not until we have the ceiling, the wood-work, the wall, the carpet or rug, the hangings, the furniture and the fittings all in harmony can the interior be called stylish.

The up-to-date Decorative Shop should be conducted by men who will suggest and assist in the selection of the proper articles, and their services may be had by the prospective buyer for the asking.

Let us hope the time may come when mistakes like those noted may less often offend against good taste.

Among the Architects

Steel for Palace Hotel

All the contracts for structural steel for the new Palace Hotel at San Francisco, have been let and arrangements made with the Southern Pacific and its connections to bring the material from the Pennsylvania manufacturing plants to the Coast with all possible speed. Some of the steel has already arrived, and it is the intention to rush work on the big caravansary from this time on. The structural steel orders amount to 7000 tons and the railroad people have arranged to load twenty-five tons to the car on the average. On this account it will require 280 cars to bring the material West—fourteen trains of twenty cars each. It will cost the Palace Hotel people $105,000 in freight charges to bring the steel to the coast.

Architect Barth Busy

Architect Herman Barth of 641 Mission street, San Francisco, is preparing plans for the following; a family hotel for William Hoag on the northwest corner of Sutter and Leavenworth streets, which will be seven stories high; a store and office building for Mr. Howard of Burlingame; plans for the reconstruction of the building on the southwest corner of Market and Spear streets, owned by Mrs. W. W. Youngs of the Hotel Jefferson.

Plans for Free Market

The State Board of Harbor Commissioners have considered the plans for a free market submitted by the engineer and instructed him to make some modifications and submit them at the next meeting of the Board, together with complete specifications. As the general scheme has been agreed upon, it is probable that the plans will be adopted and the secretary ordered to advertise for bids.

The plans provide for building two rows of stalls on seawall lot 3, the structure to face on East street, San Francisco. There will be thirty-five stalls, each fifteen feet square. The row facing on East street will contain eighteen and the second row seventeen, with a fifteen foot passage between them. There will be entrances at each end and two entrances on East street. Both stalls and passages will be under one roof. The floors and passages will be paved with concrete and a sidewalk will be run through the lot at the inner edge of the inner row of stalls. The space inside of this will be paved for teams.

In New Offices

William H. Weeks, architect, has moved from the Merrimac building, near the Ferry depot, where he located soon after the fire, to handsome offices in the Grant building, at Seventh and Market Streets, San Francisco.

Bakewell & Brown, architects for Berkeley's new city hall, are now located in comfortable quarters at 417 Montgomery Street, San Francisco.

Concrete Bridge Across Sacramento River

The efforts that have been made by the people of the northern portions of Glenn and Butte counties for the past several years, for a joint bridge across the Sacramento River, have at last met with success.

The establishing of the sugar factory at Hamilton, Glenn County, which will demand the products of a large section of the country on the Butte County side of the river, together with the necessity of easy access to the market for the other large volume of products of this rich section in both counties, have convinced the county officials of the advisability of constructing a permanent highway bridge in this vicinity.

By the unanimous vote of the Boards of Supervisors of the two counties, John B. Leonard of San Francisco has been employed as engineer to design and superintend the construction of this bridge. Mr. Leonard's instructions are to prepare plans on lines that will insure one of the most stable and permanent structures crossing this only navigable stream in the Sacramento Valley.

Hold Love Feast

The Masons and Builders' Association of San Francisco gave a love feast the night of October 5, in a down town cafe to their partners in construction, the Master Bricklayers. Covers were laid for eighty persons and the evening was one of good fellowship. The purpose of the banquet was to further the mutual relations between the two trades that are assisting in the rehabilitation of San Francisco.

The toastmaster of the banquet was J. J. Phillips. The guests of honor were Willis Polk, Henry George, George Postlethwaite, Harry Gray and other prominent contractors and architects.

Music was furnished by the Knickerbocker Quartet and a string orchestra.

A unique feature of the banquet was the menu cards which graced each seat. On the corner of the card was an engraving of a building in course of construction and a sketch of tools used by bricklayers. Strings of red, white and blue ribbon laced the paper together.

The officers of the association are: W. Reed, president; J. M. White, first vice-president; J. Riley, second vice-president; Joseph J. Phillips, secretary; Nels Larsen, treasurer.

Alameda Elks to Build

Two plans are now under consideration by the Alameda Lodge of Elks for a club house. One of the propositions is to build a home for the lodge in the business section of the city, part of the building to be given over to stores and offices. The second plan is to construct a club house on the bungalow style to be erected on the south shore near the beach. The cost of such a club house is estimated at $6500. Plans have been submitted by Architects M. V. Politeo and Charles Rogers, members of the local Elks lodge. Building operations will begin as soon as the type of building is settled upon.

To Build New Cliff House

The plans of Reid Bros., architects, for a new Cliff House have been accepted and all contracts let. The new building, erected on the old site, will be two stories high and constructed of reinforced concrete.

John Tait has secured a ten years' lease of the new Cliff House from the Sutro estate and intends carrying out his plans made previous to the destroying of the old building.

Delegates to Convention

Alfred F. Rosenheim, Ferdinand Parmentier, Myron Hunt and Octavius Morgan have been selected by the Southern California Chapter, A. I. A., to represent that body at the national convention of the American Institute which is to be held in Chicago, November 18th and 19th.

Concrete Tower

The contract for the construction of an immense controlling tower to be erected in the Little Bear valley for the Arrowhead Reservoir and Power Co. has been let to Arthur S. Bent of Los Angeles. The tower, which will be 184 feet high from the tunnel floor grade, will be erected at the front of the prestent portal of outlet tunnel No. 1. It will be 13 feet in diameter at the top and will be built of reinforced concrete.

Cement Plant for Los Angeles

Los Angeles capital is being interested to a considerable extent in a proposition to erect a large cement manufacturing plant at Tehachapi, about 120 miles south of Los Angeles. The corporation is to be known as the Golden State Portland Cement Company, and it will have a capitalization of $2,000,000, divided into $1,000,000 of preferred stock and the same amount of common stock.

The plant which it proposes to erect will have a capacity of 2,000 barrels of cement a day.

With each succeeding year the part which cement is playing in various kinds of structural work is becoming more and more important, and the industry therefore is one of special interest to building contractors. No less an authority than Thomas A. Edison has predicted that the time is not far distant when wood will give way to cement for nearly all building purposes. The timber resources of the country are rapidly becoming depleted, owing to the fact that the present consumption is about four times gerater than nature's displacement.

The Golden State Company owns two large limestone deposits, one at Tehachapi and the other at Oro Grande, and also has acquired a clay deposit at Cajon.

Francis O. Wyman, a lime manufacturer of many years' experience, is the president of the company, and Werner P. Eckdahl, who was connected with the Illinois Steel Company for seventeen years, is the general manager. George W. Parsons of Los Angeles is treasurer and a member of the board of directors.

Brick for Mills Building

C. H. Frost, of the Los Angeles Pressed Brick Company, has received an order for the ornamental brick required for the reconstruction of the Mills building in San Francisco. He reports orders on hand for more than $600,000 worth of clay products for the coming six months, some of these orders being from Oregon, Utah and New Mexico. He also has an inquiry from Central America.

Want Pay for Plans

A claim for $875 has been filed with the San Francisco supervisors by architects Dodge & Allen, who prepared the plans for the new judicial building ordered to be built at Bush and Stockton streets by the last board of supervisors at a cost of $35,000. The project fell through and the building will not be erected as other arrangements have been made to accomodate the superior courts.

Reinforced Concrete School House

Architect Harrison Albright of Los Angeles has had his plans accepted for a reinforced, concrete school house to be erected by the city of San Diego at an outlay of $100,000. This will be one of the first reinforced concrete school houses to be erected on the Coast. A large assembly hall will be a feature of the building. There will be twenty rooms in addition to the assembly hall. Mr. Albright's plans were accepted in competition with a dozen other Los Angeles and San Diego architects.

Returns From East

M. A. Murphy, manager of the Carnegie Brick and Pottery Company, has returned from a trip in the East. The company's new terra cotta manufacturing plant at Tesla, Cal., has been completed, considerably increasing the capacity of the extensive works, where fire brick, pottery and sewer pipe are manufactured. There is a very large demand for the highest class of ornamental terra cotta for the best buildings under construction in San Francisco and Los Angeles. Many of the designs recently executed are very elaborate. Among the contracts for architectural terra cotta that are being filled by the Carnegie Brick and Pottery Company are included some of the largest buildings in San Francisco.

Pioneer Skyscraper Builder

William Hamilton Russell, the New York architect who died while traveling in Europe, was one of the earliest to turn attention to the skyscraper idea for large office buildings, and many of the most notable ones in New York were built by his firm.

Reinforced Concrete Test

The initial test of a part of the ground floor of the Trustee building on the east side of Broadway between Fourth and Fifth streets, Los Angeles, was made recently and the result was highly satisfactory.

The building is ten stories in height and of reinforced concrete construction. In testing the flooring, 9600 pounds of cement, in sacks was placed on fourteen square feet of surface, which was equivalent to nearly 680 pounds to the square foot. The deflection in the flooring was not noticeable yesterday, although the weight was double that required in the average test.

The test was made under the supervision of the city inspectors and according to their estimate ranks among the best ever made in the southern city.

To Have City Architect After All

The San Francisco Supervisors have finally passed an ordinance creating the office of City Architect, placing its control entirely in the hands of the Board of Works, and directing that all municipal construction of buildings as well as their repair should be carried out under its supervision.

The operation of this law will put an end to the present anomalous condition by which architects illegally appointed by the Gallagher Board have been planning the school and other bond issue buildings.

The candidates for the position of City Architect are Newton J. Tharp and W. J. Cuthbertson, the latter having been City Architect prior to the Schmitz administration.

THE
Architect and Engineer
OF CALIFORNIA

Published Monthly in the interests of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by the Architect and Engineer Company.

SAN FRANCISCO AND LOS ANGELES

OFFICES
621 Monadnock Building - San Francisco
Telephone Temporary 1928
142 Broadway, Los Angeles Phone, Home 5747
423 Lumber Exchange Building, Portland, Or.

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

Vol. X. OCTOBER, 1907 No. 3

THE COMING MUNICIPAL ELECTION.

Never before in the history of San Francisco has so much depended upon the outcome of a municipal election as this year. The future prosperity of a great city hangs in the balance and it remains for the voter to decide which way the scales shall fall. The Architect and Engineer has no political ax to grind. It cares not a tinker's damn who is elected Mayor so long as the man is honest, independent and a servant of no one except the people. We want to see San Francisco rid of grafters and we can not help believing that the majority of the people of San Francisco acquiesce in these sentiments and would like the moral and material cleaning up of their city to go on. This can only be possible by electing Mayor Taylor and re-electing District Attorney Langdon.

To elect another Union Labor crowd would be to court a repetition of the disastrous conditions existing under the Schmitz administration. To elect a body of politicians headed by one Ryan and a friend of the disgraced former Mayor, Eugene Schmitz, would be almost as serious a mistake as to elect the union laborite McCarthy.

San Francisco does not want either of these men nor any of their hirelings. Victory for the Taylor ticket will insure confidence and without that confidence no outside capitalist would be so insane as to trust his money to our handling. Everybody knows San Francisco can not go on in its splendid march towards rehabilitation and reconstruction without foreign capital. The work thus far accomplished has consumed every available dollar, so far as local finances are concerned, and what is done from now on must necessarily be with the aid of our Eastern money lenders. The issue would seem to be plain to the voter, and if he cares aught for the future of his city he will vote the Taylor ticket on election day.

WANTED: A GOOD INDEX PLAN FOR FILES

A short time before the earthquake and fire some interested architect or contractor, we cannot recall which, nor can we remember his name, wrote us an outline for an index to the various volumes of the Architect and Engineer. It is hardly necessary to add that the letter containing the suggestions was destroyed, along with nearly everything else, in the great fire. The ideas offered by our now unknown correspondent were so good that we had planned to adopt them. If he will be good enough to disclose his identity and again outline his plans to us we will be extremely grateful, or if any of our readers have any suggestions to offer in the way of a handy index for use in binding back numbers of the book, we would be glad to hear from them.

ARE SKYSCRAPERS DANGEROUS?

Commenting upon a recent alarming prophecy by George W. Babb, president of the New York Board of Fire Underwriters, that it was only a matter of time when the skyscraper district of New York would be destroyed by fire, Architect Fitzpatrick, the executive officer of the International Building Inspectors' Society, and probably the highest authority on fireproof construction in the country, says that while such a thing is not beyond the realm of possibility it is highly improbable under present conditions and could, at slight expense, be made an utter impossibility.

The skyscraper district of New York cannot be compared to anything there was at Baltimore or in San Francisco. In both conflagrations the tall buildings suffered by reason of the vast amount of poor building there was all about them. Fire found but comparatively little to burn within them and in a great many cases though damaged themselves they served as a bulwark, a protection to adjacent and more combustible buildings. In Baltimore, as a matter of fact, as soon as the fire reached the skyscraping district, small as it was, it burnt itself out in them and they actually saved the city beyond them, stopping the fire much as a dyke does the inrush of flood tide.

In New York, as in many of the new skyscrapers in San Francisco, the tall steel frames are protected and enclosed with imperishable brick and hollow tile fireproofing, which give a fire in the contents of the buildings nothing of a structural nature to feed upon and destroy.

Mr. Fitzpatrick thinks the skyscraper district of New York is about the safest place from fire in the entire country, and if the owners of the buildings would but go to work and put wired glass in metal sash in the windows where they have not already done so, thus making it absolutely impossible for fire to find ingress into the tall buildings from without, that district would be so safe that little or no insurance would need be carried upon the buildings about which Mr. Babb is so much perturbed.

Some New Books

The Bates and Guild Company, Boston, Mass., have just published a book containing 24 plates of detail drawings in mill construction prepared by Hawley W. Morton, architect. The plates are of especial value to architects and contractors who go into heavy mill work. There is a handy index to the plates and a descriptive preface by the author.

"Engineers Handbook of Concrete Reinforcement" made by the American Steel and Wire Company is the name of a handy little document just issued by the American Steel and Wire Company. It is an invaluable addition to the library of every concrete engineer or architect, for that matter. The book contains some excellent material on reinforced concrete, how good it is, its economic use and properties, bonding old and new concrete, tables etc., Price $2.00.

Percy L. Marks, architect, author of "The Principles of Planning," etc., has written "The Principles of Architectural Design" which has just appeared in a 300 page book, neatly bound and containing 165 full page illustrations. The work is most complete and the various problems are taken up in a most masterful manner. The book is published in London and the American representative is Wm. T. Comstock, 23 Warren Street, New York. Price $4.50.

The Publisher's Corner

Warranted Expansion

The rapidly increasing business of the Otis Elevator Company has necessitated a large increase in their facilities for handling the Los Angeles business. Firmly believing that Los Angeles is to have a very rapid and solid growth in the future, the Otis Elevator Company is preparing to meet an extensive growth in its business. The company has felt for some time past that its equipment for handling its business in Southern California has not been fully up to the Otis standard. The company has recently secured a long term lease of the premises at No. 218-220 East Fourth street, where it will make extensive alterations to the present building and erect a substantial addition to cover the entire lot. A complete shop equipment will be installed and a large force of skilled mechanics will be employed.

Opens Coast Office

The Trussed Concrete Steel Company has opened a branch office in San Francisco, under the management of Felix Kahn, and will advance the sale of Trussed Bar, Kahn Ribbed Metal and Cup Bars.

The company carries a local stock of Kahn Ribbed Metal and Cup Bars enough to take care of the immediate wants of any contractor. "We also carry", writes Mr. Kahn, "Cup Bars in stock from 3/8 inch to 1 1/4 inch in diameter, varying by eighths, and length up to 46 feet. In connection with the selling of our steel, we will do engineering work, and make preliminary estimates on any reinforced concrete work for prospective purchasers.

"Our engineering work will be under the charge of W. L. Kelly, C. E., who has been designing reinforced concrete in this city since the fire."

Opens Seattle Office

The Van Emon Elevator Company has opened a branch office in the American Bank building, Seattle. The company also has an office in Portland and is going to make a strong bid for the elevator business in the Northwest.

Howe Scale Company Moves

The Howe Scale Company of San Francisco announces its removal from 1690 Market street, where it has been since the fire, to more commodious and centrally located quarters at 143 and 149 Front street, which thoroughfare is again becoming popular as a commercial and wholesale center. In addition to a complete line of scales the company is agent for the Howe safes, Fisk's fancy iron stable stalls and stable fixtures, as well as a full line of Fisk's copper weather vanes.

High Ideals in Paints

From the Real Estate and Builders' Journal

Owners, architects and builders are vitally interested in pure paints for both exterior and interior use. No item of expense in building or maintaining a house is of greater importance, because painting is an expense that continually recurs in the proper maintenance of a frame building. Good paint properly applied will last for years, while poor paint soon wears off. The problem of selecting the best paint, therefore, is of great importance from the standpoint of economical management of property.

The Real Estate and Building Journal has recently made an original investigation of the numerous prepared paints now on the market, with a view of selecting a paint that can be fully recommended as absolutely reliable and of uniform excellence at all times and for all purposes. Our investigations have led us to the conclusion that the "Monarch Paint," manufactured by the Senour Manufacturing Company, of Chicago, stands at the top in the character of its ingredients, the method of the manufacture and its general utility and value. For twenty-two years past the Senour paints have been the standard of excellence in the mixed paint business, and that standard has never been lowered. The Senour Manufacturing Company was the pioneer in pure paints and its reputation as such remains undimmed to this day. Its immense business has been built up solely through the reputation of its goods as the best article of mixed paints that can be produced.

The secret of mixed paint manufacture is not difficult to understand. It is generally known that the principal ingredients of all good paint are linseed oil, white lead and oxide of zinc, to which a small amount of driers may be added if desired. The secret of manufacture lies in the proper proportioning of these ingredients and the careful grinding and mixing of the paint. That is where "Monarch Paint" excels. It contains no adulterants or make-weights, is strictly 100 per cent pure, and is scientifically mixed and compounded. In other words, it is an honest paint, and that is the secret of the success of the Senour Manufacturing Company extending over nearly a quarter of a century.

The Senour Company's paints are handled in San Francisco by the Klatt-Hirsch Company of 113 Front street.

San Francisco Concern Installs Largest Cleaning System in World

Marshall Field & Co. are the acknowledged leaders in the commercial world, particularly as to the equipment of their stores in fixtures, lighting and other features. Any equipment, before being purchased by them, is subjected to a rigid expert comparison with other manufactures of similar lines, and its adoption is an acknowledgment of its superiority.

Perhaps the most interesting feature in their new stores is the sanitary system of cleaning, which is of ample capacity to take care of some 100,000 yards of carpeted surface daily. This amount of yardage in carpet of itself represents a cost of a quarter million of dollars. Besides improving the appearance of the stores, it avoids the noise that would exist on floors devoid of covering, and with this sanitary system of cleaning, makes it possible to keep this vast amount of surface in a dustless condition. This equipment, supplied by the Sanitary Devices Manufacturing Company of San Francisco, has also attracted much attention among other large Eastern stores, and several have been equipped with outfits suitable for their requirements.

To handle the vast amount of dirt that it removes nightly, and to make it possible to clean the store with short lengths of hose, there are four main lines of horizontal piping; one for each building, from which fifteen risers extend up through the floors, with some 200 valves to which the hose and sweepers may be attached.

The machinery in the basement consists of three units; each of forty horsepower, and have a total displacement of 3540 cubic feet of free air per minute. There are automatic controlling features on these pumps which regulate the amount of horse-power required to the actual number of sweepers in operation.

The dust separators, or tanks in which the dust is collected, are an important feature, for without any screens or baffle plates to interfere with the free passage of air to the vacuum pumps, all dirt, including the finer dust, is completely eliminated by an atomizing attachment.

Besides the tools for cleaning carpets, there are also special tools for dusting walls, shelving, sprinkler pipes, and in fact removing loose dust wherever it exists.

It is estimated that the saving in merchandise alone will soon pay for the equipment.

Among other advantages is the fact that the working done in a dustless manner, can, to a large extent, be performed in the day time.

Tile and Slate Roofing

Mark Kirkby reports having taken a number of excellent roofing contracts in Southern California. Mr. Kirkby is a leading roofer in both slate and tile in Los Angeles and some of the finest buildings in the southern city were roofed by him. He is Southern California agent for Akron, Ohio, roofing tile and Eureka black slate. Recent contracts taken by Mr. Kirkby are the Inglewood Crematory, garage for Mrs. Robert J. Burdett, residence for A. C. Bilicke, the well known hotel man, Bixby hotel, Long Beach, St. Agnes Church, Los Angeles, Home for the Aged at Boyle Heights, and other equally important structures.

Machinery and Electrical Company

The Machinery & Electrical Company of Los Angeles is coming to the front very rapidly as leading heating and ventilating engineers and contractors. Many of the largest public buildings and school houses in the state have been or are now being equipped with the Sturtevant blast system handled by this company. Some of the recent contracts taken are the following: heating the Methodist Episcopal Church, Long Beach, Marsh & Russell, architects; Presbyterian Church, Pomona, Ferdinand Davis, architect; San Dimas Grammar School, Ferdinand Davis, architect; Claremont High School, F. S. Allen, architect; San Jose Presbyterian Church, Marsh & Russell, architects; Sherman Heights School, National City High School, and San Diego High School, F. S. Allen, architect. Forty-five thermostats are to be installed in the latter. A contract has also been taken for heating the new Los Angeles Masonic temple, Hudson & Munsell, architects.

Paving Many Streets

The Worswick Street Paving Company of Fresno has taken the contract for paving about 200,000 feet of public streets in Merced. Asphaltum will be put down and it is expected that when the present contract has been filled several additional streets will be paved. Fourteen blocks of streets have just been paved by the Worswick Company in Modesto and that hustling town is now enjoying the cleanest and smoothest thoroughfares it has been its privilege to boast of for many years.



1200 Tons of Steel

Woods & Huddart, who have had a large sale of their steel bars for concrete reinforcement, will supply the cast bases and steel superstructure for the John A. Roebling & Sons warehouse to be erected at the corner of Folsom and Hawthorn streets. There will be about 1200 tons of steel in the building. Sutton & Weeks are the architects.

Fine Steel Job

The fine piece of steel work being erected for the Chronicle building is attracting much attention and causing favorable comments from persons watching its construction. The steel was rolled by P. Noble of San Francisco and is one of the largest jobs of the year. The frame has been made heavy enough to stand future earthquake stresses and much care is being taken in the riveting and anchoring of the great columns and girders. The D. H. Burnham Company are the architects and C. A. Blume is the erecting contractor.

Union Lime Co. of Los Angeles Busy

Among the contracts lately taken by the Union Lime Company of Los Angeles, was one for furnishing the plaster, lath and ferring for the suspended ceilings in the Trustee building, Los Angeles and all the cement for the reinforced concrete floors in the Wright & Callendar building, Hill and Fourth streets, Los Angeles. The Union Company has the Southern California agency for the K. C. brand (Kansas City) of Portland cement which is used in preference to foreign or local cement by nearly all the Southern California Contractors. The company also carries a complete line of Duplex hangers and Sackett plaster boards.

Steger's Electrical Works, Fresno

The Steger Electrical Works of Fresno report an exceptionally good business during the usually dull summer months and Mr. Steger says the outlook for an active fall and winter is most encouraging. Mr Steger has just finished wiring the Hector Burness residence at Anita Vineyard which house, when finished, will cost close to $12,000. The new Fresno post office building has also been thoroughly wired by the Steger Works as have the three new buildings of Adolph Bracker which have been equipped with handsome lighting fixtures. It is expected that the new post office will be ready for occupancy the first of the new year.

NOTICE: Civil Engineering Course in the International Correspondence Schools, including text-books can be had at a very low figure. Legal transfer and lessons direct from the schools. Address E. O. K 621 Monadnock Bldg., San Francisco.

An Index to the Advertisements

New Advertisers Not Noted Here Will Be Classified Next Month



Exhibit of Fireproof Doors by Fred Nichols at Recent State Fair

The Shaw Construction Company

The shaw Company, building contractors, formerly located at No. 11 Union Place, San Francisco, are now occupying more central quarters at 406 Kearny street. Messrs. McIntyre & Satterlee, who were formerly associated with Mr. Shaw have branched out for themselves, taking offices in the Crocker building. Mr. Shaw's son is now a member of the company which announces that it is in a position to give a flat price on any kind of building construction and guarantee a speedy completion of the job. The company will figure on brick, concrete or frame work. Some of the more important buildings put up by the Shaw Company the past year include the Mutual Biscuit Company, the Devoto building at Pacific and Dupont streets from plans by A. W. Smith of Oakland and flats for Benjamin Massone on Green street, San Francisco.

Engine Houses for San Jose

The plans of Wolfe & McKenzie, architects of San Jose, have been approved by the San Jose Fire Commissioners, for a central fire station to replace the building damaged by the earthquake on North Market street. The building will be up-to-date and will have a cement floor, concrete walls, and will cost $27,000.

Architect William Binder, of the same city, has had his plans accepted for a second fire station to be erected on Third street, San Jose, at a cost of $16,000. Bids for the construction of these two buildings will be taken at once. Plans submitted for two other fire stations were rejected and new designs have been called for.

The city of San Jose will also purchase two new fire engines and an aerial truck and will spend $60,000 in remodeling the damaged City Hall.

Won Recognition at State Fair

Fred Nichols of East Oakland, who manufactures metal doors, window trim, etc., made a clean sweep of medals, blue ribbons and diplomas at the recent State Fair in Sacramento. Mr. Nichols had an exceptionally creditable exhibit and he is pleased that his efforts were appreciated by the fair management. His mahogany finished metal doors were awarded a gold medal, while he received a cash prize of $50 and a blue ribbon and diploma for displaying the finest piece of work for the exterior of a building. The display consisted of two very handsomely finished copper store doors.

Four-Story Building

A four-story building of substantial construction is to be built by Claus Spreckels at the corner of Market and Fremont streets and will be occupied principally by the Henshaw, Bulkley Company. The building will probably be of brick and concrete with a steel frame. Howard & Galloway, with offices in the Atlas building, San Francisco, are the architects and work on the structure will be rushed.

Alameda Improvements

The city of Alameda has voted to borrow $305,000 for municipal improvements. A $50,000 lighting plant, a new fire house and other buildings are to be erected as soon as plans can be perfected.

The Alaska Pacific Marble Company

Alaska, the land of never ending wonders, is again the source of an important business announcement. A few months ago the fortieth anniversary of the hoisting of the American flag on Alaskan shores was celebrated. Forty years ago—yes, and long since then—the public school geographies all over the United States pictured Alaska as a mere collection of icebergs and polar bears. It was popularly supposed to be valueless except for a few furs and arctic whales; an ice-bound region of perpetual winter. Wm. H. Seward was severely censured for squandering millions of good American money for a barren waste that Russia unloaded on us. With the advent of enterprising Yankees, however, the latent natural resources of Alaska soon began to be uncovered and developed. Her fisheries and furs soon yielded more to Uncle Sam each year than the entire cost of the country. For more than a quarter of a century now she has had in operation the largest quartz mine in the world. Ten years ago the discovery of her amazing deposits of placer gold set the world on fire with excitement, and today the matter of her production of fifteen or twenty million dollars a year in native gold passes almost without comment. Her mountains of rich copper ore, her deposits of coal, iron, oil and other elements of wealth, promising to outrival both Michigan and Pennsylvania, are attracting the investments of Morgan, the Guggenheims and other money kings. More than that, Alaska is becoming the theater of the greatest railroad building activity on earth. Immensely strong railroad corporations are vieing with each other in laying bands of steel into the mighty Yukon valley. One such recently constructed an electric light plant along its right of way so that it could run construction crews both night and day—something never before known on earth in railroad building. Modern towns have sprung up along the coast of Southeastern Alaska, and it is found that the warm Japan ocean current so modifies the climate there that it is not materially different from that of Puget Sound. No wonder San Francisco is becoming aroused to the necessity of making an effort to secure her just share of Alaska's rich and growing trade.

Now comes the Alaska Pacific Marble Company with an announcement that it has a few thousand acres of the finest marble in the world, situated on a few islands just off Alaska's southern coast. Marble is one of the highest priced building materials on the Pacific Coast—high priced mostly because only a very small percentage of the supply has ever been produced at home. We bring it in from Italy, from Vermont, Tennessee and other distant sources of supply, under costly freight conditions that make it necessary for dealers to put high prices upon it to cover the cost of production, aside from their margin of profit. Notwithstanding the obstacles and high prices, builders have used vast amounts of marble in finishing and adorning their best buildings. The modern tendency is to use only the very best material, and no other material has ever been discovered that could take the place of marble. The fact that mountains of the finest marble now seem to be available, situated right on tide water on the Pacific Coast, near enough and under such transportation conditions that the product will have the benefit of low freight rates, suggests points of general advantage to the public. Cheaper marble will mean decreased cost in the construction of first-class business buildings. It will mean a more general use of marble than heretofore. The location of an adequate supply on the Pacific Coast will mean the keeping of more money at home than heretofore, instead of sending it away to Italy or to the Atlantic states.

Samples of eight or ten varieties of this new marble, in blocks and specimens, have been brought to San Francisco, and have convinced local marble dealers that its quality and colors are desirable. In fact, the properties have been visited and experted and favorably reported upon by well known local experts of good standing. We are also informed that within a short time the company will commence shipping its marble to this market in large quantities. The local demand for marble in rebuilding San Francisco gives the matter more than ordinary interest.

Samples of the marble may be seen at 886 McAllister street, San Francisco. Those desiring references as to the company's standing, the quality of its marble, etc., should write any or all of the following: Hon. F. C. Harper, Port Townsend, Washington; Peter Taube, Seattle, Washington; Geo. E. Huggins, Rainier, Washington; M. Whittier, Riverton, Washington; Hon. W. H. Kneeland, Shelton, Washington; Dr. Charles E. Parent, Sausalito, Cal.; John Cilker, Los Gatos, Cal.; D. E. Miles, Dunsmuir, Cal.; F. W. Tinkham, Tumwater, Washington; Daniel Finch, Tumwater, Washington; James A. Moore, Seattle, Washington; Hon. Geo. M. Stewart, Seattle, Washington.

———

WANTS POSITION.—Cement expert. Young man with technical education, practical experience in cement and concrete construction, wants a position with engineer or architect. Best of references. Address, G. P., care of The Architect and Engineer.



The Distributing Depot

Is Helping to Rebuild San Francisco

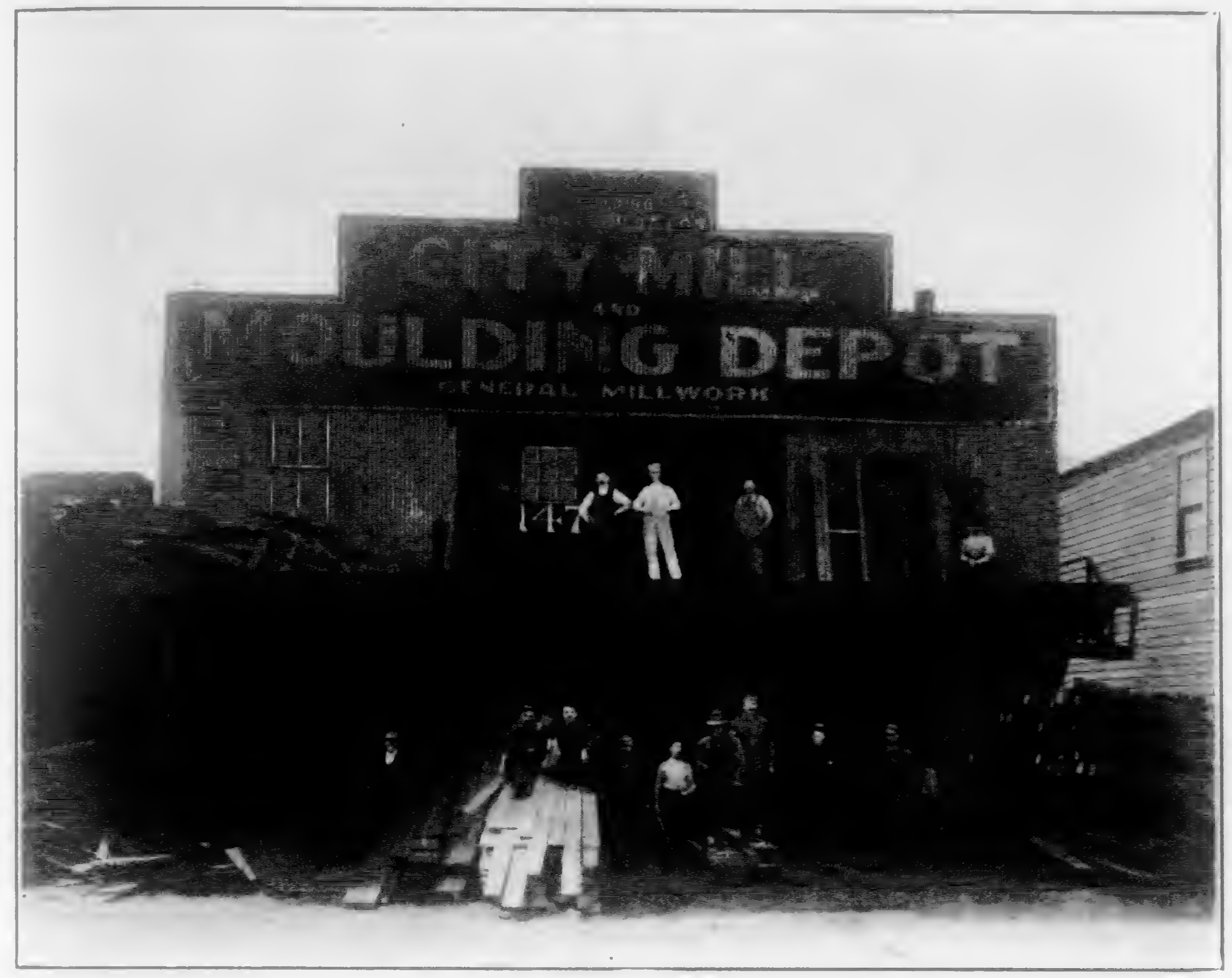
The illustrations show two of the plants of the Building Investment Company—its city mill and moulding depot. The Building Investment Company is interested in other building industries which give it a prominent place in the up-building of San Francisco.

The Building Investment Company is a local corporation with a capitalization of $75,000. The president is Mr. R. Cadwallader, the secretary is Mr. Frank McArthur and the vice-president and general manager is Mr. P. H. Bosworth, who has been identified with building in San Francisco for a number of years.

The Building Investment Company is confining its business entirely to manufacturing; its city mill and moulding depot handling millwork exclusively.

The city mill and moulding depot consists at present of a large builders' supply depot at 126 West Mission street, in fact the largest in the city, and a planing mill at 147 Beach street, between Stockton and Powell streets. The supply depot, at 126 West Mission street, will in time carry the most complete line of stock building material ever attempted by any firm in San Francisco, and will be able to furnish the mill work complete for any ordinary building out of its racks and warehouses, including all styles of paneling, art mouldings, compo work, mantels, stair work and all interior finishing and case work. The planing mill, at 147 Beach street, handles all the contract work, and since the first wheel turned has had a hard time to keep ahead of its orders, and while other plants have had to lay off their crews this mill has been compelled to increase its capacity of production and the management has seriously considered the advisability of running two shifts to supply the increased demand for stock from the West Mission street depot. This excessive amount of work is due largely to the efforts of Mr. John T. Quirk, one of the best known mill men in San Francisco, who has entire charge of all the outside business. The policy of this business has also helped to make it immediately popular, the management realizing that the abnormal conditions caused by the fire have gradually disappeared and has endeavored in every way to meet the change by placing its business dealings on the same footing as they were before the fire.

By extending credit to all who are financially worthy, by making prompt deliveries of material and by handing out figures that are always close and generally the lowest, the concern is making many fast friends among the building contractors.



The Planing Mill

Mr. Kiger to Handle Concrete Mixer

Everett S. Kiger, well known in San Francisco as manager of the American Machinery Exchange, 830 Folsom street, has taken the agency in San Francisco and vicinity for the Wallace-Lindesmith Hoist Company goods, which include concrete mixers and concrete machinery of all kinds. Mr. Kiger's long experience in handling machinery is good assurance of his success in handling this new and excellent line of goods.

Designed Transom

Vickery, Atkins & Torey designed the beautiful transom frame which has been turned out in metal by Chr. Deterding, and a photograph of which appears in Mr. Deterding's advertisement in this issue.